2011

The Burden of Arthritis in South Carolina

An Analysis of the Impact of Arthritis in South Carolina and the Nation

Division of Chronic Disease Epidemiology and Evaluation
South Carolina Department of Health and Environmental Control

Table of Contents

List of Figures

List of Tables

Acknowledgment

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Executive Summary

Arthritis is one of the nation's most common diseases, affecting about one in five or 52.5 million U.S. adults. In South Carolina, approximately one million adults or 28% report having doctor-diagnosed arthritis, which comprises more than 100 different conditions. Furthermore, arthritis is the most common cause of disability and has been for more than 15 years. Among adults with arthritis in South Carolina, 51% report activity limitations, and 45% report work limitations as a result of their condition. Arthritis exacts a tremendous toll on individuals, family members, and the health care system. Symptoms can result in pain, stiffness, and swelling. Caregiver burden may be experienced by family members who have to disrupt their usual activities to provide support and assistance to people with arthritis. Furthermore, the economic impact is huge, an estimated $128 billion in the U.S. and $1.3 billion in South Carolina. Costs include medical and mental health expenditures, as well as indirect costs, such as lost earnings.

Arthritis affects people of all ages. Contrary to common perception, two-thirds of adults with arthritis are between the ages of 18 and 64. While arthritis affects adults of all ages, the prevalence does increase with age. Fifty-five percent of adults ages 65 and older in SC report doctor-diagnosed arthritis. With the aging of the population, it is projected that by 2030, the prevalence of arthritis will increase to 25% of adults or 67 million people, a demographic trend with serious public health implications.

The impact of arthritis is compounded when it co-occurs with other health conditions, a significant concern in South Carolina due to the high prevalence of chronic diseases. More than half of adults with diabetes and heart disease have arthritis; in addition, nearly half of those with high blood pressure and high cholesterol have arthritis. Pain and limitations due to arthritis can impede effective management of these other health conditions, by interfering with physical activity. About 38% of adults with doctor-diagnosed arthritis are considered physically inactive, compared to 26% of those without arthritis. Individuals with arthritis and diabetes or arthritis and heart disease are almost three times more likely to be physically inactive than those with neither condition.

Excess weight is a significant, modifiable risk factor for arthritis. Among adults with arthritis, 42% are obese, compared to 31% of adults in the general population. Even a modest reduction in weight can reduce the risk of getting arthritis and improve function and the quality of life for people with arthritis. Therefore, it is important to coordinate obesity reduction and arthritis initiatives.

There is ample evidence that prevention measures, such as physical activity and self-management interventions, are effective in managing arthritis. However, the interventions are not uniformly available throughout South Carolina, and many people do not understand the benefits of the interventions or know where to go to receive them. Among adults with arthritis, less than half who are overweight or obese have been told their doctor to lose weight, and only about one in ten report having attended a self-management class for arthritis. In looking ahead, it is important to develop effective strategies to increase both availability and use of programs. Doing so will require forging new partnerships and pursing education opportunities to increase participation in local course offerings.

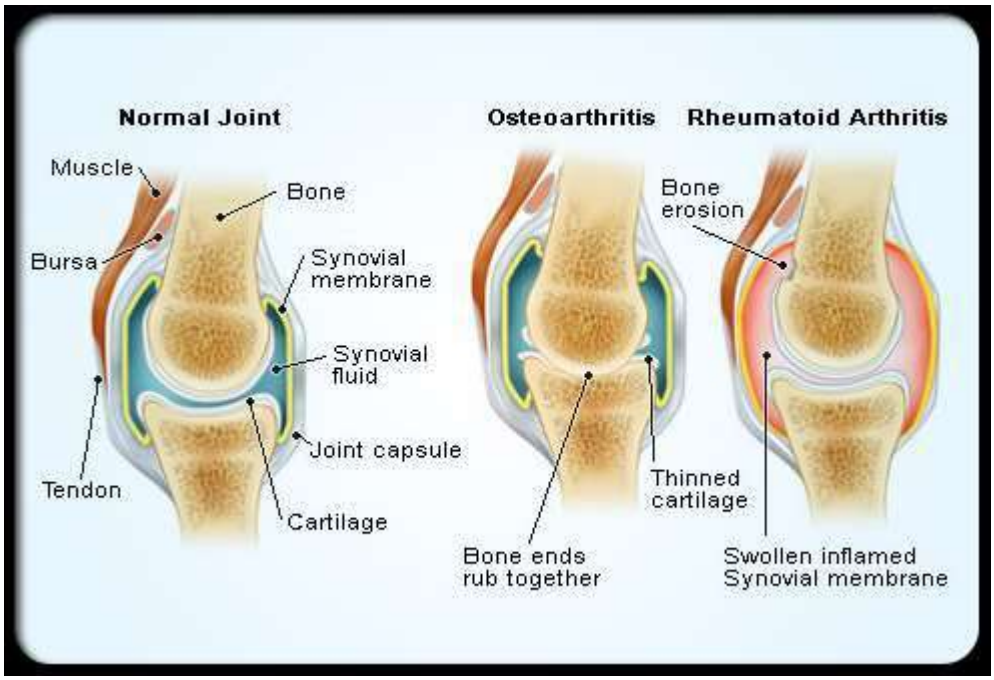
Introduction

Arthritis affects nearly 52.5 million Americans (Barbour et al., 2013)and is the nation's most common cause of disability (Brault, Hootman, Helmick, Theis, & Armour, 2009). It has a substantial effect on the quality of life for those who experience its painful and disabling symptoms, as well as on family members and caregivers. Each year, inpatient, ambulatory, prescription medications, home health, emergency room, and other medical expenditures amounting to over $353 billion are attributed to arthritis (Cisternas et al., 2009).

Arthritis consists of over 100 different diseases and conditions that affect the joints, the surrounding tissues, and other connective tissues. Common symptoms include pain, achiness, stiffness, and swelling in or around the joints. The three most common forms of arthritis and other rheumatic conditions are:

- Osteoarthritis
- Rheumatoid Arthritis
- Fibromyalgia

The following diagram shows the differences between a normal, healthy joint, a joint affected by osteoarthritis, and one affected by rheumatoid arthritis.



http://www.mayoclinic.com/health/medical/IM03689

Other forms of arthritis include gout, lupus, juvenile rheumatoid arthritis, bursitis, tendonitis, Crohn's disease, reflex sympathetic dystrophy syndrome, and arthritis associated with infectious disease such as Lyme disease, syphilis of the muscle, and gonoccoccal infection of the joint.

Arthritis affects people of all ages and all racial and ethnic groups. However, it is more common in females and older Americans (Barbour et al., 2013), affecting about 50% of adults over age 65. The number of people with arthritis is expected to more than double between 2000 and 2030 due to the increase in the population over age 65 as the Baby Boomers enter the over age 65 category. The impact on health care and public health systems, social services, and family caregivers will be catastrophic, unless some action is taken to mitigate this alarming trend.

Definition of Arthritis

While there are more than 100 different forms of arthritis and rheumatic conditions, for definitional purposes the four most common forms will be discussed.

Osteoarthritis is the most common kind of arthritis. It can affect several joints of the body, and most often affects the hip, knee, foot, and hand. It occurs when the cartilage lining of the joints wears away, causing the bones to rub together. This leads to pain, stiffness, swelling, inflammation, and loss of mobility.

Rheumatoid arthritis is a chronic inflammatory condition in which the body's immune system attacks cartilage, bone, and sometimes, internal organs, usually causing joint disease. Chronic inflammation of the joint lining occurs, which may spread to other joint tissues resulting in bone and cartilage erosion, joint deformities, and movement limitations. Rheumatoid arthritis can affect the lungs and heart and can increase risk of death due to respiratory or infectious diseases.

Gout is a rheumatic disease resulting from deposition of uric acid crystals (monosodium urate) in tissues and fluids within the body. This process is caused by an overproduction or under excretion of uric acid. Certain common medications, alcohol, and dietary foods are known to be contributory factors. Acute gout will typically manifest itself as an acutely red, hot, and swollen joint with excruciating pain. These acute gouty flare-ups respond well to treatment with oral anti-inflammatory medicines and may be prevented with medication and diet changes. Recurrent bouts of acute gout can lead to a degenerative form of chronic arthritis called gouty arthritis. (Centers for Disease Control, 2011).

Fibromyalgia is a pain syndrome that affects muscle and muscle attachments. The cause is unknown. Symptoms include widespread pain throughout the muscles, physical and mental fatigue, headaches, depression, irritable bowel syndrome, and sleep disorders.

The Centers for Disease Control and Prevention (CDC) defines people with arthritis as those who have doctor-diagnosed arthritis. People are considered to have arthritis if they answered yes to the following question on the Behavioral Risk Factor Surveillance System (BRFSS) survey: "Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?" More details on specific questions from the BRFSS regarding arthritis and related data can be found in Appendix A.

Changes and Enhancements to the 2011 BRFSS Survey

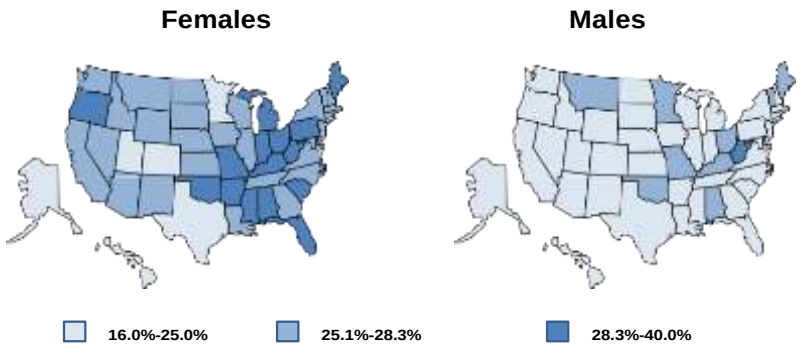
Changes to the BRFSS were implemented during the 2011 BRFSS survey, which was released in 2012. These changes included adding data received from cell phone users and a use of a more sophisticated weighting method, which facilitated the inclusion of a broader demographic and ultimately provided a better reflection of the nation's health status (Centers for Disease Control and Prevention, 2012). A more detailed discussion of these new methodologies is found in the Surveillance Section of this report. Because of the changes in methodology, the 2011 BRFSS estimates cannot be compared to previous years. Throughout this report, arthritis trends of previous years are reported for reference purposes with a break in the trend line before the 2011 estimates. This is to indicate that these estimates cannot be compared to those in previous years.

Chapter One: Characteristics of People with Arthritis

Arthritis is not only an older person's disease. It also affects young people and people of all racial and ethnic groups. Nearly two out of every three people with arthritis are younger than 65 years old (Prevention & Promotion, 2013). However, the prevalence of arthritis increases with age, and it is more common among older Americans, females, and people with less than a high school education.

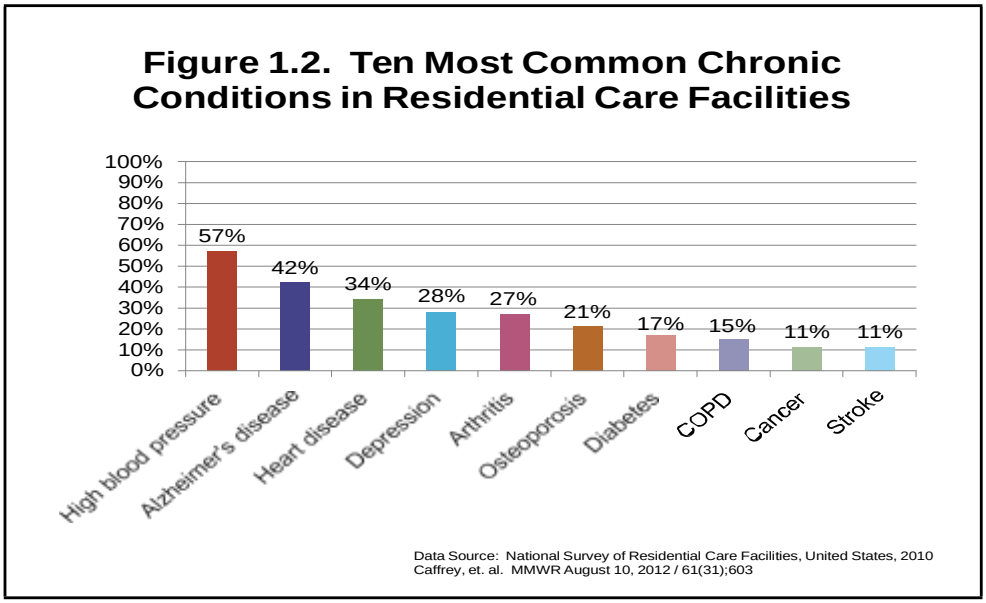
Older Americans are disproportionally affected by arthritis (Barbour et al., 2013). The National Health Interview Survey reports that females are more likely to be diagnosed with arthritis than males (24.5% vs. 19.4%, Fig.1.1), (Barbour et al., 2013), and since they tend to live longer than males, this further adds to the high prevalence of arthritis in an older population.

Figure 1.1. Arthritis Prevalence by State and Gender, 2011

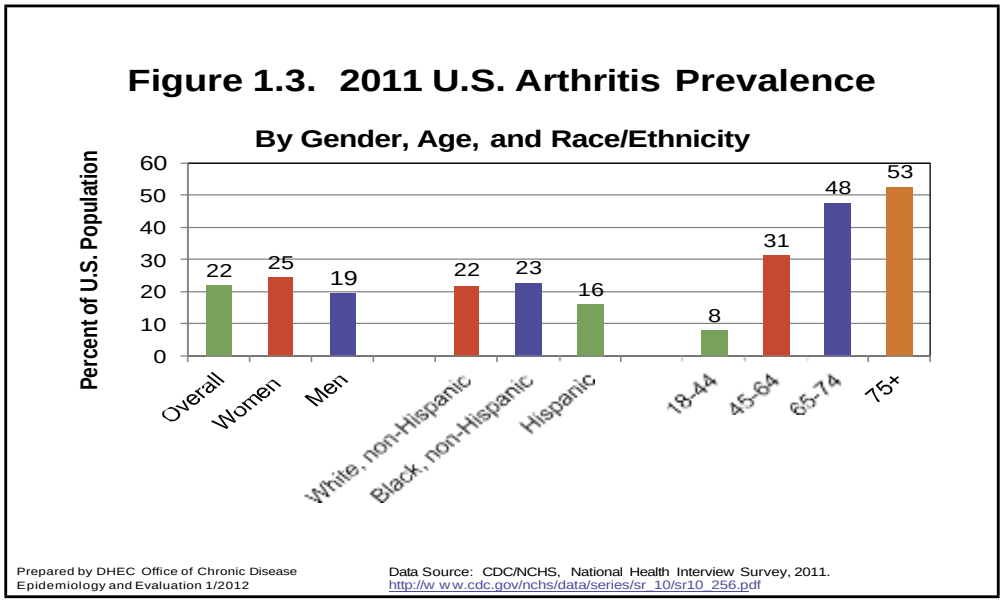


Data Source: 2011 BRFSS

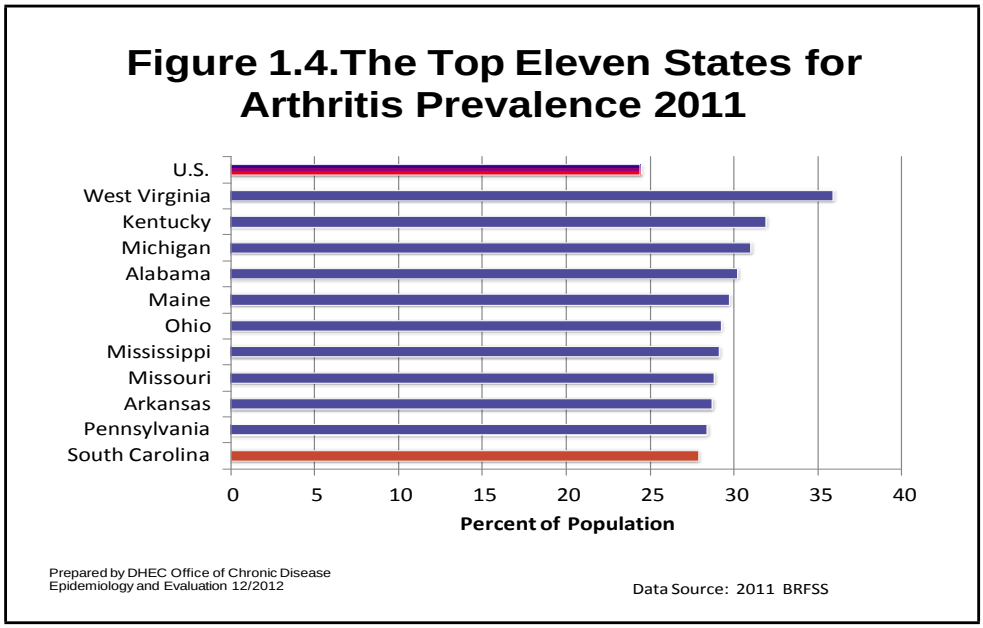
Arthritis is the most common cause of disability and one of the most common chronic conditions in long-term care facilities. Figure 1.2 shows the ten most common chronic conditions among persons living in residential care facilities in the United States, based on the National Survey of Residential Care Facilities (2010). Arthritis is the fifth most common chronic condition found among residents of long-term care facilities (Caffrey, Sengupta, Park-Lee, & Harris-Kojetin, 2012). Although cost-effective interventions are available, they are considerably underused (Brady, Kruger, Helmick, Callahan, & Boutaugh, 2003).



Based on the 2011 National Health Interview Survey (NHIS), about 22.1% of adults in the United States reported having doctor-diagnosed arthritis. The prevalence is higher in females, increases with age, and it affects all racial groups (Fig. 1.3).



According to 2011 BRFSS, South Carolina has the 11th highest prevalence of arthritis in the nation (Fig. 1.4). Many of the other states in the top 10 are in the Southeast; however, New England, the Midwest, and the Great Lakes states are also represented.



Prevalence of Arthritis in South Carolina

Based on results from the 2011 SC BRFSS, 27.9% of South Carolina adults over the age of 18 reported having doctor-diagnosed arthritis (Fig. 1.5), which is about 20% higher than the national prevalence estimate. As seen in the following figures (Fig. 1.5-1.8), the percentage of South Carolinians with doctor-diagnosed arthritis was consistently higher for females, increased with age, and decreased with higher educational levels. All racial groups were affected. The current arthritis prevalence is 33% higher for females than males (Fig 1.6).

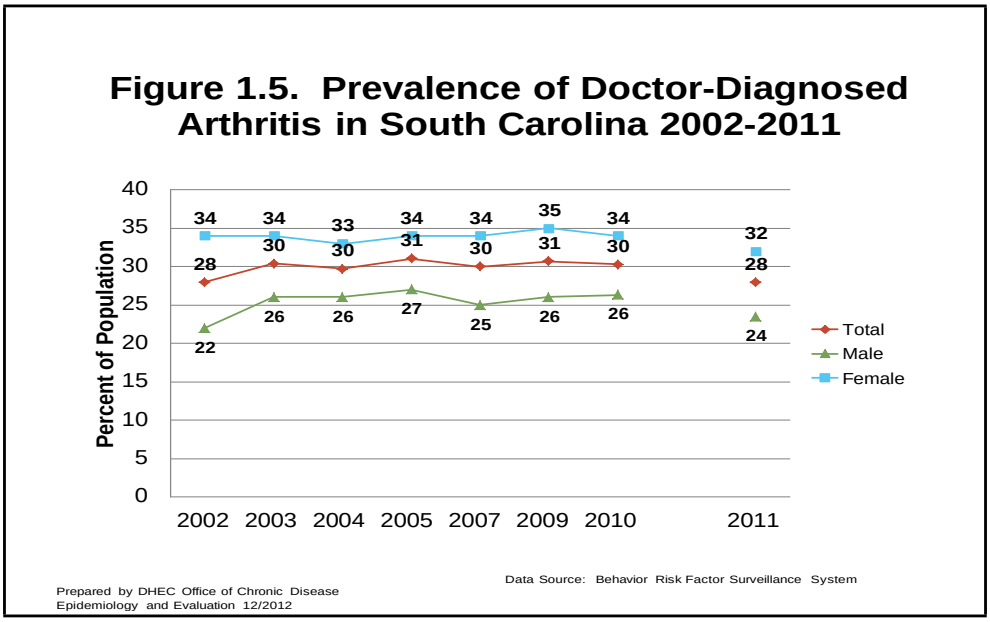
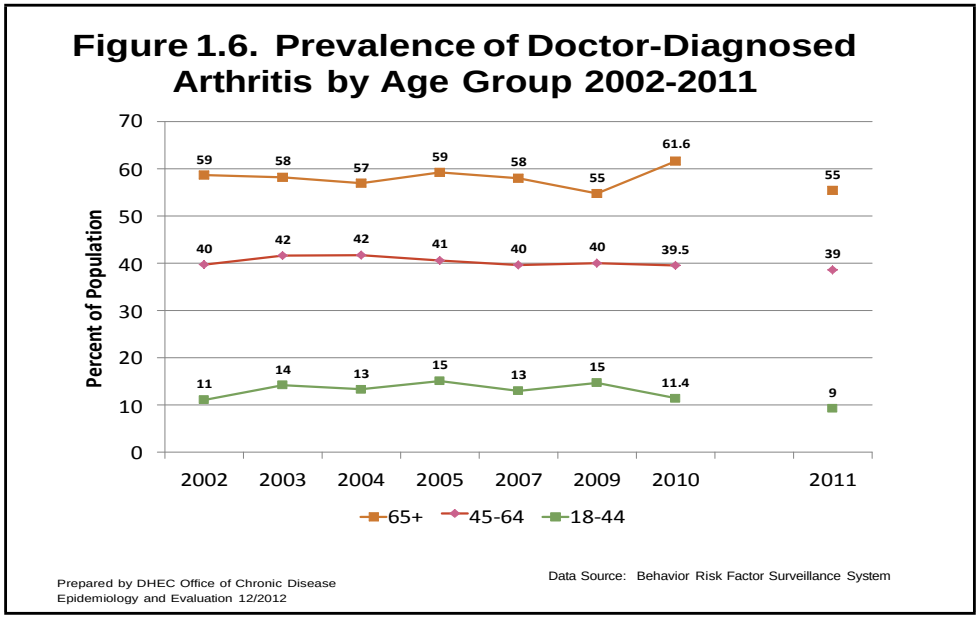
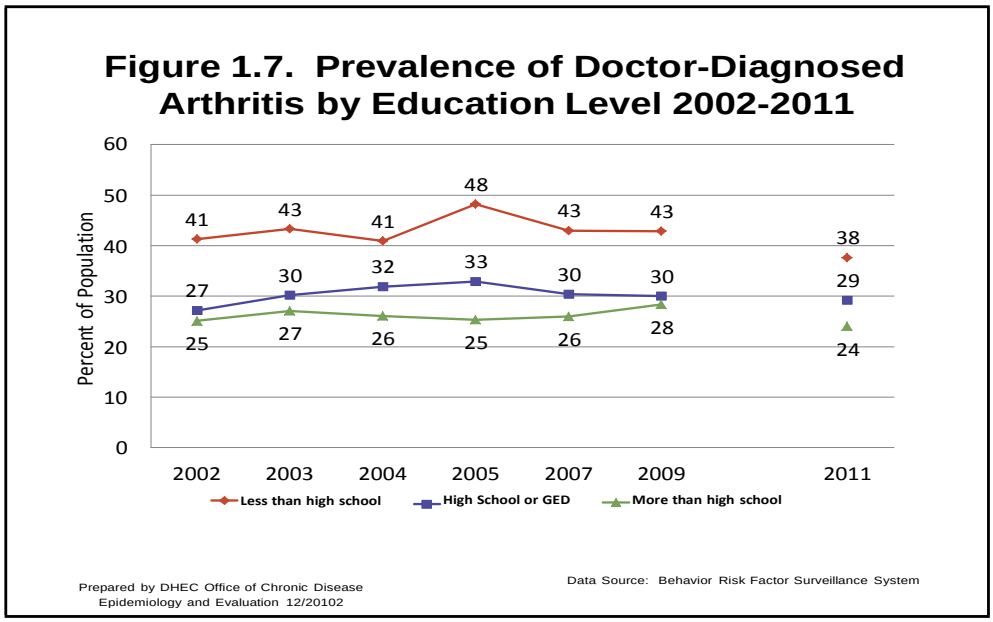


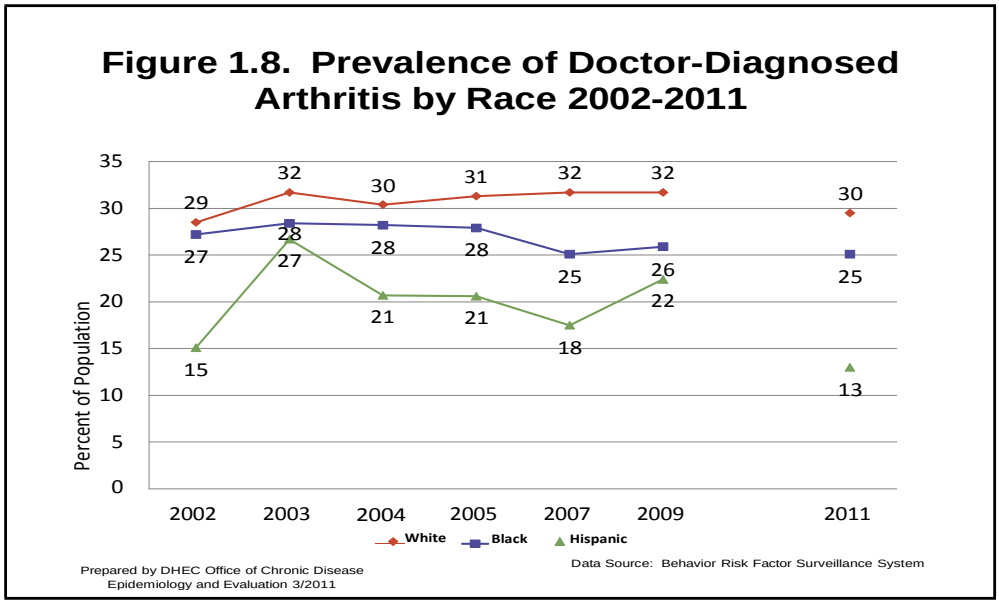
Figure 1.6 shows prevalence rates by age group. While arthritis affects people of all ages, it is more common among older adults. Arthritis prevalence for the age group 45-64 is four times higher than for the age group 18-44, and the prevalence among those 65 and older is six times higher than for those 18-44 years of age.



Arthritis tends to occur more often among those with less than a high school education (Fig. 1.7). The prevalence of arthritis among those with less than a high school education is 60% higher than among those with at least one year of post-high school education. The prevalence among those with a high school diploma is about 20% higher than among those with more than a high school diploma.



Arthritis prevalence varies by race and ethnicity. The white population has the highest arthritis prevalence. In 2011, arthritis prevalence in the white population was almost one in three adults (30%). About one in four black adults (25%) have arthritis. The prevalence of arthritis among whites is about 18% higher than among blacks and more than twice than the prevalence among Hispanics (Fig. 1.8).



White females have the highest arthritis prevalence, followed by black females, white males, and black males (Fig. 1.9). In 2011, arthritis prevalence among white females was about 20% higher than among black females and about 40% higher than among white males.

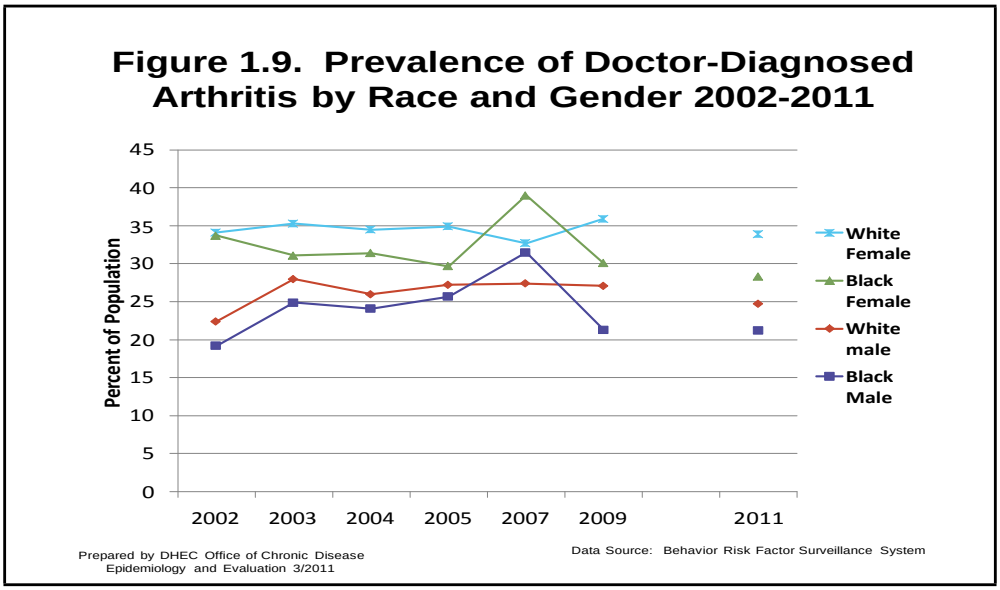
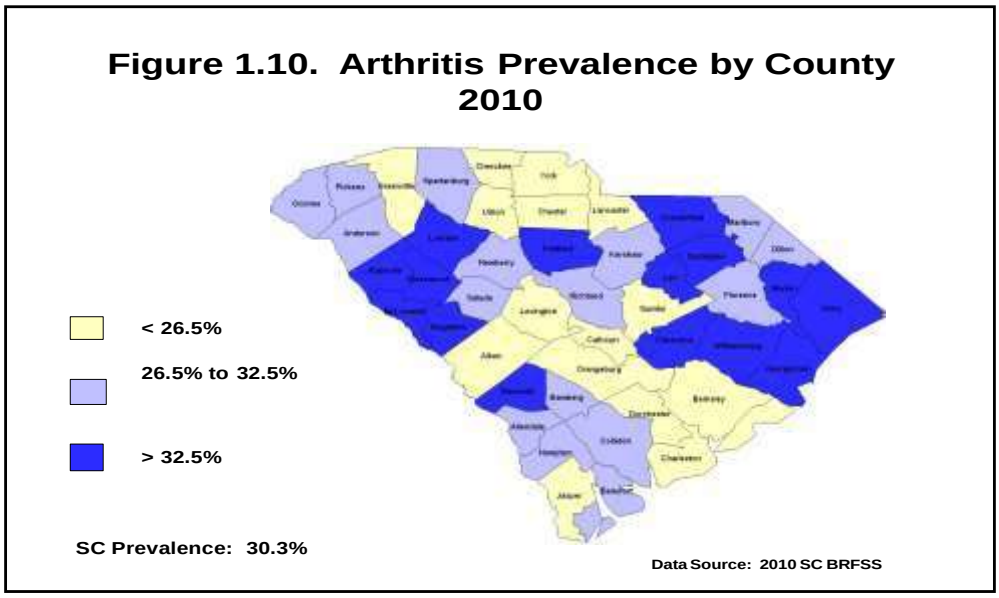


Figure 1.10 also shows additional graphic representation of the prevalence of arthritis by county in South Carolina. Counties along the northern coast reported the highest prevalence of arthritis.



Hospitalization for Arthritis in South Carolina

The National Arthritis Data Work Group has designated more than 100 conditions that are classified as arthritis. These include osteoarthritis, rheumatoid arthritis, fibromyalgia, lupus and gout, as well as a number of other conditions that are classified as diseases of the musculoskeletal system and connective tissue (National Arthritis Data Workgroup, 1994). In

2011, there were 16,842 hospitalizations in South Carolina that had a primary diagnosis code for arthritis. These discharges amounted to approximately 55,055 days of care and nearly $974 million in total charges. The average cost for a hospital stay with an arthritis diagnosis was $57,776 and the average length of stay was 3.3 days. The typical arthritis hospital patient was white, female, and over age 65. More than four out of five hospital stays for arthritis were for whites, over half were over 65, and almost 60% were female (Table 1.1).

Table 1.1. 2011 Arthritis Hospitalizations, Length of Stay and Charges for SC

	Number of Discharges		Length of Stay (Days)		Total Charges ($)		
	Number	Percent	Mean	Sum	Mean	Percent	Sum
All Hospitalizations	537,581		4.8	2,562,479	$34,893.71		$18,758,193,500
Arthritis Hospitalizations	16,842	100.0%	3.3	55,055	$57,776.92	100.0%	$973,078,900
Age Group							
< 15	106	0.6%	2.5	269	$16,983.02	0.2%	$1,800,200
15-44	953	5.7%	3.1	2,928	$53,676.60	5.3%	$51,153,800
45-64	7,188	42.7%	3.1	22,130	$59,135.56	43.7%	$425,066,400
65 and over	8,595	51.0%	3.5	29,728	$57,598.43	50.9%	$495,058,500
Sex							
Female	9,966	59.2%	3.3	33,297	$57,580.40	59.0%	$573,846,300
Male	6,876	40.8%	3.2	21,758	$58,061.75	41.0%	$399,232,600
Race/Ethnicity							
White	13,263	78.7%	3.1	41,485	$57,750.79	78.7%	$765,948,700
Black	3,279	19.5%	3.9	12,625	$58,435.38	19.7%	$191,609,600
Other	294	1.7%	3.1	918	$51,955.78	1.6%	$15,275,000

Data Source: 2011 Hospital Discharge Data, SC Office of Research and Statistics

In 2011, there were 8,734 knee replacements completed in South Carolina. These procedures amounted to 29,109 days of care and total charges exceeding $516 million. Although knee replacements are performed in other situations, most knee replacements are a result of arthritis (Weinstein et al., 2013). Thus, knee replacements are used as one measure of burden of hospitalization in arthritis cases. The average length of stay was 3.3 days, and the average cost

of the surgery and aftercare was $59,172.09. The majority of replacements (57%) were performed on people ages 65 and older. Females were almost twice as likely to have a knee replacement as males, and whites were over four times more likely to get knee replacements than blacks (Table 1.2).

Table 1.2. 2011 Knee Replacements, Total Charges, and Length of Stay for SC

	Number of Discharges		Total Charges			Length of Stay (Days)	
	Number	Percent	Mean	Percent	Sum	Mean	Sum
All Knee Replacements	8,734	100.0%	$59,172.92	100.0%	$516,816,300	3.3	29,109
Age Group							
< 15	**1**	0.0%	$202,800.00	0.0%	$202,800	8.0	8
15-44	**135**	1.5%	$60,610.37	1.6%	$8,182,400	3.1	418
45-64	**3626**	41.5%	$59,522.37	41.8%	$215,828,100	3.2	11679
65 and over	**4972**	56.9%	$58,850.16	56.6%	$292,603,000	3.4	17004
Sex							
F	**5628**	64.4%	$59,324.79	64.6%	$333,879,900	3.4	19015
M	**3106**	35.6%	$58,897.75	35.4%	$182,936,400	3.2	10094
Race/Ethnicity							
White	**6969**	79.8%	$58,544.20	78.9%	$407,994,500	3.3	22698
Black	**1643**	18.8%	$62,247.60	19.8%	$102,272,800	3.7	6004
Other	**120**	1.4%	$53,990.00	1.3%	$6,478,800	3.3	401

Data Source: 2011 Hospital Discharge Data, SC Office of Research and Statistics

Chapter Two: Risk Factors and Comorbidities

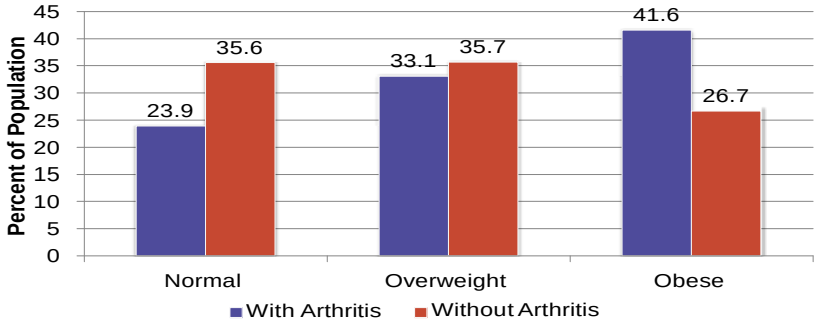
A main risk factor for arthritis is obesity. Table 2.1 lists other common risk factors for arthritis.

Table 2.1. Modifiable Risk Factors for Arthritis
Obesity
Muscle Weakness
Sports or Occupational Injuries
Poor Joint Mechanics
Infections

Obesity

Obesity is a major risk factor of arthritis (Ajeganova, Andersson, & Hafstrom, 2013; Crowson, Matteson, Davis, & Gabriel, 2013; Jhun et al., 2012; Mork, Holtermann, & Nilsen, 2012; Murphy & Helmick, 2012; Sridhar, Jarrett, Xerogeanes, & Labib, 2012). In 2011, almost one in three (30.8%) South Carolina adults were considered obese. South Carolinians with arthritis had a significantly higher rate of obesity (41.6%) than those without arthritis (26.7%), Fig. 2.1.

Figure 2.1. Self-Report Body Mass Index for South Carolina Adults with and without Doctor-Diagnosed Arthritis, 2011



Prepared by DHEC Office of Chronic Disease Epidemiology and Evaluation 12/2012

Data Source: Behavior Risk Factor Surveillance System

Physical Activity

Physical inactivity is a term used to identify people who do not engage in any physical activity during their leisure time. Despite the well-publicized benefits of physical activity, current data show only modest improvement in physical activity patterns among Americans over the past decade (Dwyer-Lindgren et al., 2013). The prevalence of physical inactivity among adults remains high in the U.S. and South Carolina. Regular physical activity reduces the risk of being overweight and promotes the body's expenditure of energy. Physical inactivity is defined as no leisure time physical activity or exercise during the past 30 days, other than the respondent's regular job. Slightly more than one in four South Carolina adults (27%) were physically inactive in 2011, and about half (50%) met the physical activity recommendations of at least 150 minutes of moderate physical activity per week. About 38% of people with doctor-diagnosed arthritis were considered physically inactive, compared to 25.5% of those without arthritis. People with arthritis tend to be inactive or have insufficient activity levels (Fig. 2.2).

Figure 2.2. Self-Report Physical Activity Status for South Carolina Adults with and without Doctor-Diagnosed Arthritis, 2011

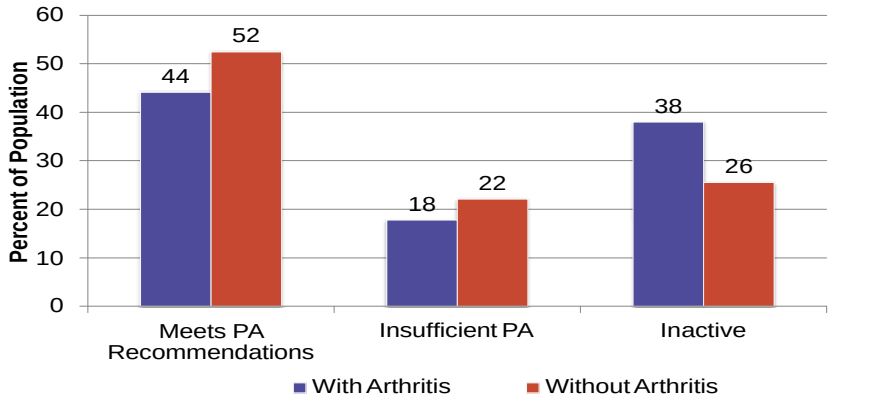
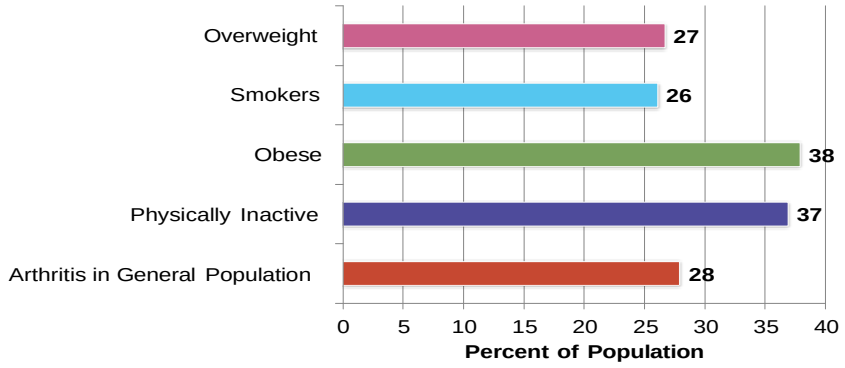


Figure 2.3 reflects the prevalence of arthritis in South Carolinians with associated characteristics, including overweight, obesity, smoking, and physical inactivity, compared to arthritis prevalence in the general population. Arthritis tends to be more prevalent in people who are obese or who are physically inactive. Arthritis prevalence is 40% higher in those who are obese and 30% higher in those who are physically inactive than in the general population. Arthritis prevalence in those who are overweight or smokers is not significantly different from that of the general population.

Figure 2.3. Prevalence of Arthritis Among Adults with Lifestyle Characteristics, 2011



Data Source: 2011 SC BRFSS

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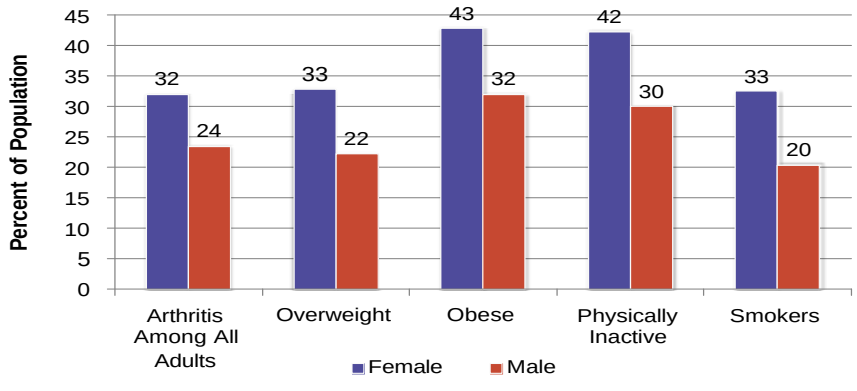
Arthritis prevalence differed by gender for lifestyle-related risk factors. Arthritis prevalence was higher in females with lifestyle characteristics than in females overall. Females who are obese and physically inactive have a significantly higher prevalence of arthritis than females in the general population. Arthritis prevalence in females who smoke or who were overweight was no different than in the general female population. The pattern in males was somewhat different. Arthritis prevalence in males with lifestyle risk factors differed very little from the overall male population, with the exception of obesity. Males who were obese had higher arthritis prevalence than males in general (Fig. 2.4).

Figure 2.4. Prevalence of Arthritis Among Adults with Lifestyle Characteristics



Data Source: 2011 SC BRFSS

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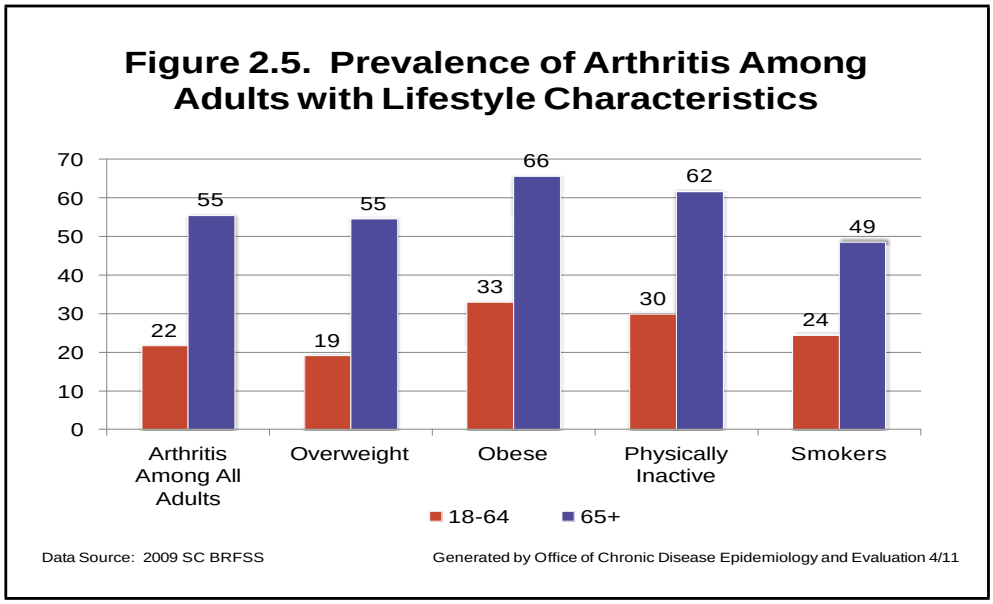
The prevalence of arthritis among the general population by age compared to the prevalence of arthritis among those with lifestyle characteristics by age did not differ, except among those who were obese and those who were physically inactive. Among the age groups 18-64 and 65 and older who were obese, the prevalence of arthritis was higher than the prevalence among the general population for both age groups. The prevalence of arthritis was also significantly higher among those ages 18-64 who were physically inactive (30%) than among the same age group in the general population (22%), (Fig. 2.5).

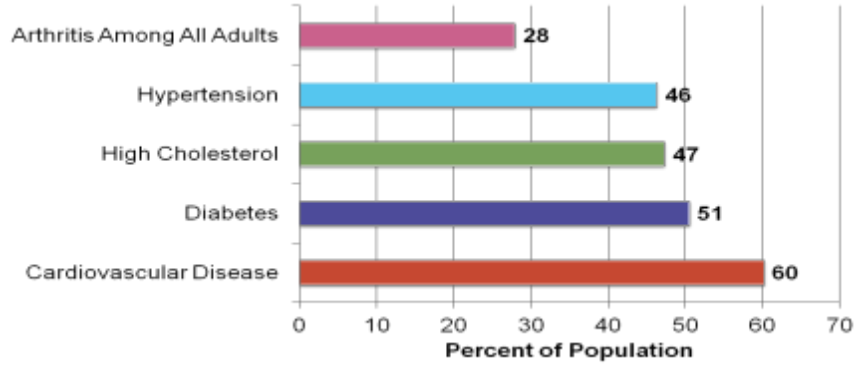


Impact of Arthritis on Associated Chronic Conditions

Chronic health conditions affect a majority of people with arthritis. The existence of two or more chronic health conditions is known as comorbidity. Comorbidities can decrease quality of life. In 2011, the prevalence of more than one chronic condition among adults with arthritis was statistically significantly higher than among the general population.

Arthritis also tends to be more prevalent in adults with other chronic conditions than in the general population. South Carolinians with cardiovascular disease have more than twice the prevalence of arthritis than the general population, and those with diabetes, high cholesterol, and hypertension have 70% to 80% higher prevalence of arthritis than the general population (Fig. 2.6).

Figure 2.6. Prevalence of Arthritis Among Adults with Other Chronic Conditions, 2011



Data Source: 2011 SC BRFSS

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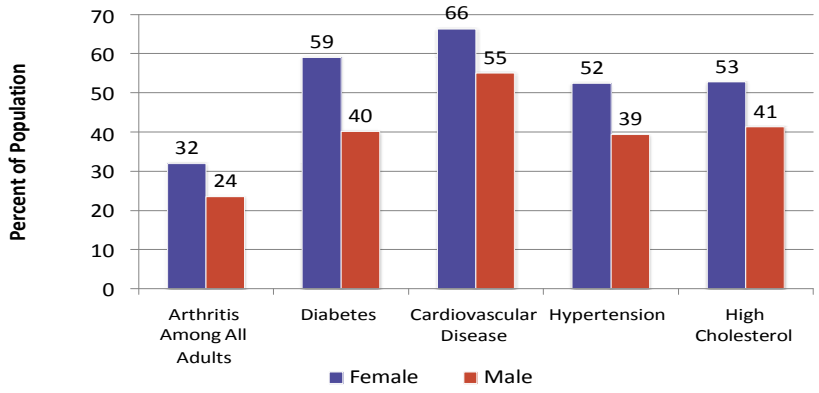
The prevalence of arthritis among adults with other chronic conditions varied by gender (Fig. 2.7). The prevalence is significantly higher among females than among males for each of the conditions listed in the figure 2.7. In the general population, the prevalence of arthritis was 40% higher in females than in males. Among adults with diabetes, arthritis was 50% more common among females than among males. Furthermore, females with diabetes were almost twice as likely to have arthritis as were females in the general population. Compared to the general population, both males and females with cardiovascular disease were more than twice as likely to have arthritis.

Figure 2.7. Prevalence of Arthritis Among Adults with Other Chronic Conditions by Gender, 2011



Data Source: 2011 SC BRFSS

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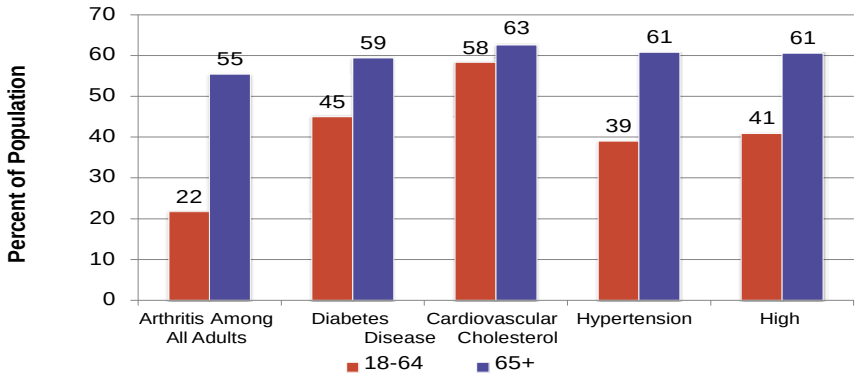
The prevalence of arthritis was significantly higher among adults 65 and older than among those under the age of 65. However, in SC adults with diabetes and cardiovascular disease, the prevalence of arthritis was not significantly different among adults ages 18-64 than among those ages 65 and older (Fig. 2.8).

Figure 2.8. Prevalence of Arthritis Among Adults with Other Chronic Conditions by Age Group, 2011



Data Source: 2011 SC BRFSS

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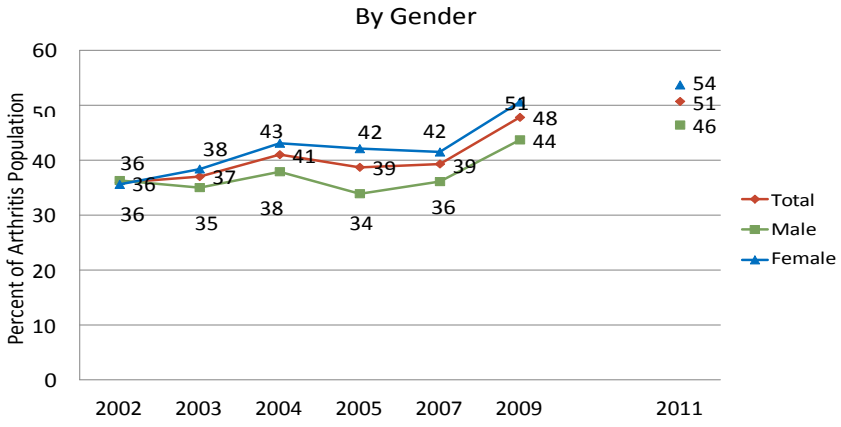
Chapter Three: Quality of Life

Activity Limitation Attributable to Arthritis in South Carolina

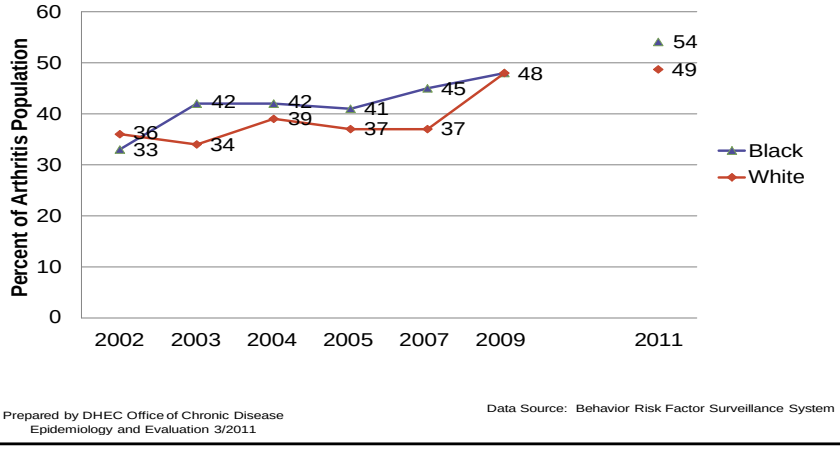
The percentage of people with doctor-diagnosed arthritis who have self-reported activity limitation in South Carolina was 51% in 2011 (Fig. 3.1).

Figure 3.1. Prevalence of Activity Limitation Attributable to Doctor-Diagnosed Arthritis SC BRFSS 2002-2009



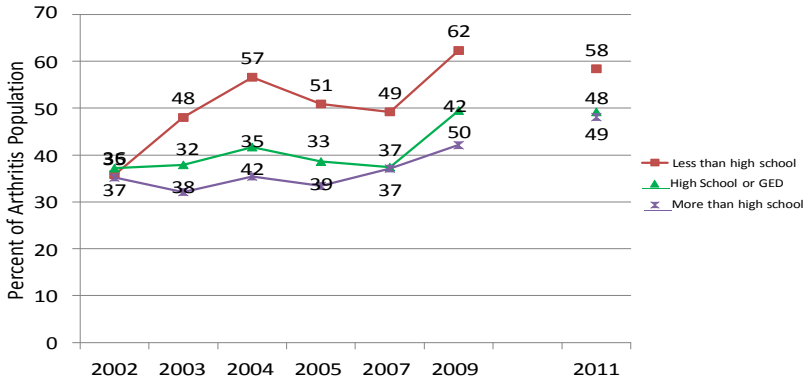
There has been very little difference in activity limitation between blacks and whites. Insufficient data exists for Hispanics and other race/ethnicities to determine the prevalence of activity limitation (Fig 3.2).

Figure 3.2. Prevalence of Activity Limitation Attributable to Doctor-Diagnosed Arthritis by Race 2002-2011



The prevalence of activity limitation differs significantly by education level. Those with less than a high school education have a rate of activity limitation almost 50% higher than those with more than high school education (Fig. 3.3).

Figure 3.3. Prevalence of Activity Limitation Attributable to Doctor-Diagnosed Arthritis by Education Level 2002-2011

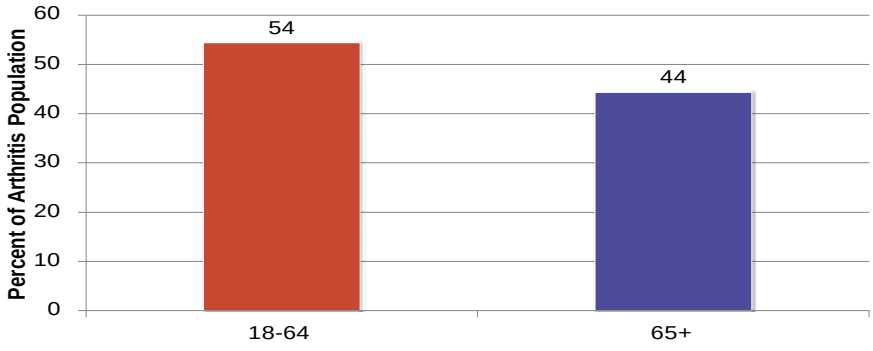


Prepared by DHEC Office of Chronic Disease Epidemiology and Evaluation 3/2011

Data Source: Behavior Risk Factor Surveillance System

Activity limitation due to arthritis was significantly higher in the population with arthritis ages 18-64 than in those ages 65 and older (Fig. 3.4).

Figure 3.4. Activity Limitation Attributable to Arthritis by Age Group



Data Source: 2011 SC BRFSS

Generated by Office of Chronic Disease Epidemiology and Evaluation 01/13

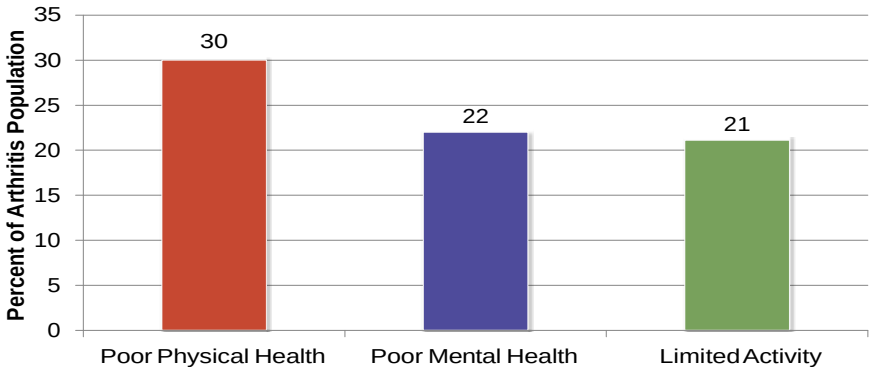
Effects of Arthritis on Physical and Mental Health in South Carolina

Arthritis can contribute to poor physical and poor mental health (Furner, Hootman, Helmick, Bolen, & Zack, 2011). In 2011, all BRFSS respondents were asked the following questions about their health status in the past 30 days:

- "Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?"
- "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?"
- "During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities such as self-care, work, or recreation?"

Figures 3.5-3.8 reflect the proportion of the arthritis population who had 14 or more days of poor mental health, poor physical health, or limited activity. Approximately one in three persons with arthritis (30%) had at least 14 days of poor physical health in one month, and almost one in five (20%) had at least 14 days of poor mental health in one month. About one in five (21%) had at least 14 days of limited activity in 30 days.

Figure 3.5. Arthritis Population with More than 14 Days of Poor Health in One Month, 2011

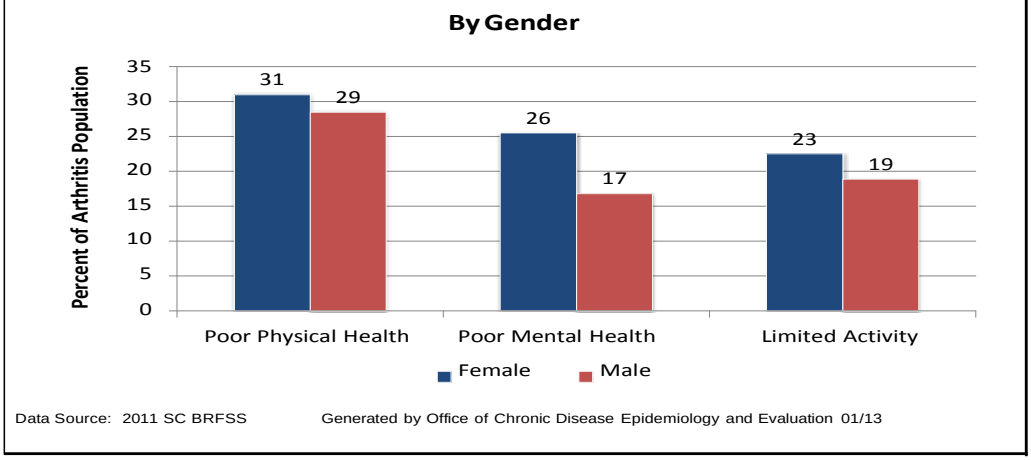


Data Source: 2011 SC BRFSS Generated by Office of Chronic Disease Epidemiology and Evaluation 01/13

Poor physical health was slightly more likely to occur in females than males, and poor mental health was significantly higher in females than in males. A total of 21% of adults in South Carolina who have arthritis reported activity limitations for more than 14 days in one month

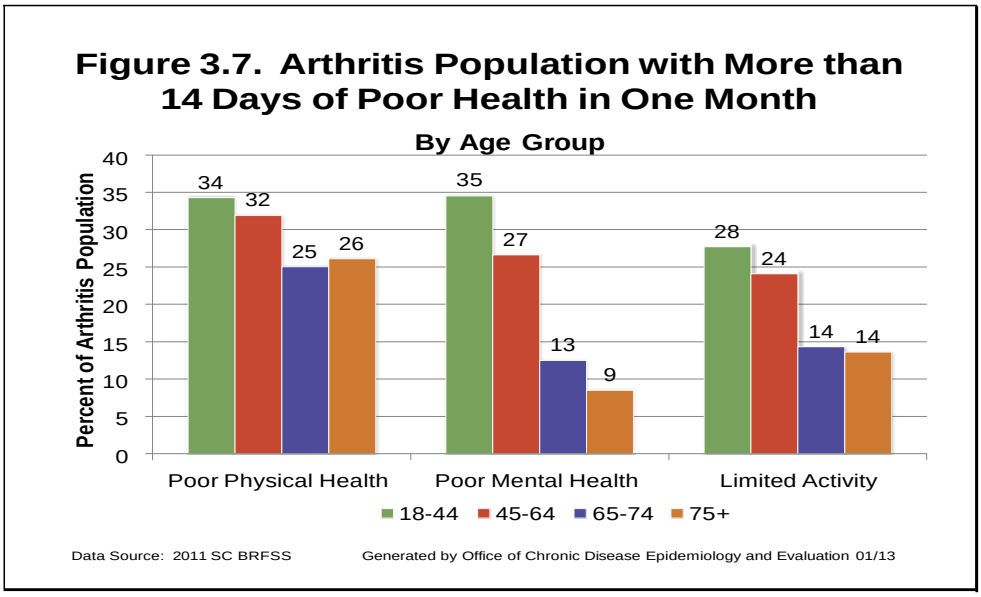
(Fig. 3.6). Limited activity was slightly higher in females than males but the difference was not statistically significant (Fig 3.6).

Figure 3.6. Arthritis Population with More than 14 Days of Poor Health in One Month

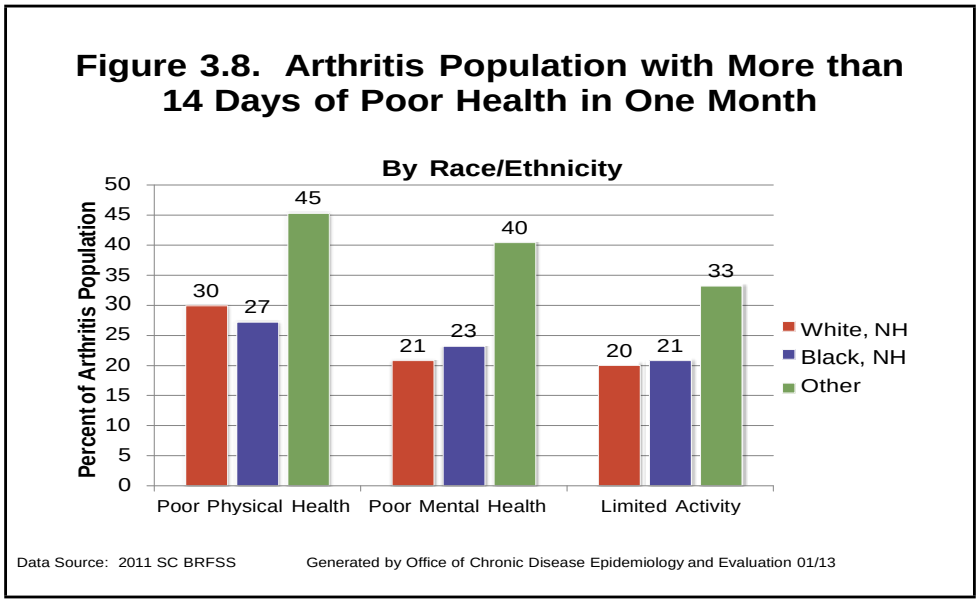


Data Source: 2011 SC BRFSS Generated by Office of Chronic Disease Epidemiology and Evaluation 01/13

In looking at individuals with arthritis who had at least 14 days of poor health or limited activity in one month by age group, the prevalence of poor physical health, poor mental health and limited activity decreased as age increased, with a slight increase in poor physical health in the population over age 75. Poor mental health was significantly more common in younger age groups, among those 18-64, than in older age groups ages 65-74 and 75 and older. Limited activity due to poor mental or physical health was also significantly lower in older age groups (Fig. 3.7).



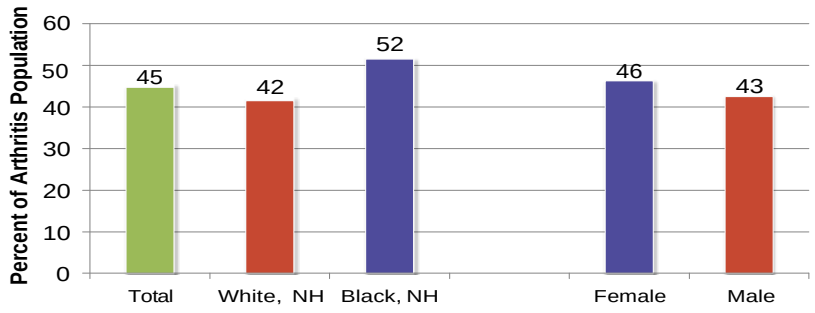
Very little difference in prevalence of poor physical and mental health existed by race/ethnicity, with one exception. Those with arthritis who were in the "Other" category were almost twice as likely to suffer poor physical health for at least 14 days as the white or black population (Fig. 3.8).



People with arthritis often have difficulty performing their jobs due to pain and stiffness. This can be true particularly if the job entails physical labor. Approximately 45% of adults in South Carolina who are living with arthritis reported work limitations in 2011. Work limitation was more prevalent among blacks and among females than among whites or males (Fig. 3.9).

Figure 3.9. Prevalence of Work Limitation in People with Arthritis 2011

By Race and Gender

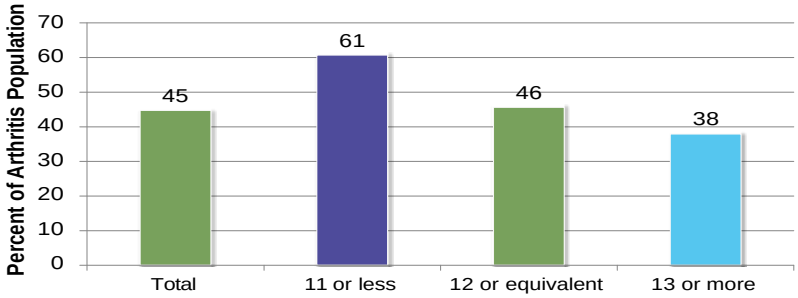


Data Source: 2011 SC BRFSS Generated by Office of Chronic Disease Epidemiology and Evaluation 01/13

People with arthritis who have less than a high school education were almost twice as likely to report a work limitation, compared to those with at least one year of college (Fig 3.10). This may be due in part to the fact that people with less than a high school education are more likely to have a job that entails physical labor. Pain and stiffness would be much more likely to interfere with a job involving physical labor than one that entails sitting at a desk. However, pain and stiffness in the hands and/or fingers could interfere with typing on a computer keyboard, and pain or stiffness in the back or legs could make sitting at a desk uncomfortable. Furthermore, pain could interfere with the ability to concentrate and result in lower productivity.

Figure 3.10. Prevalence of Work Limitation in People with Arthritis 2011

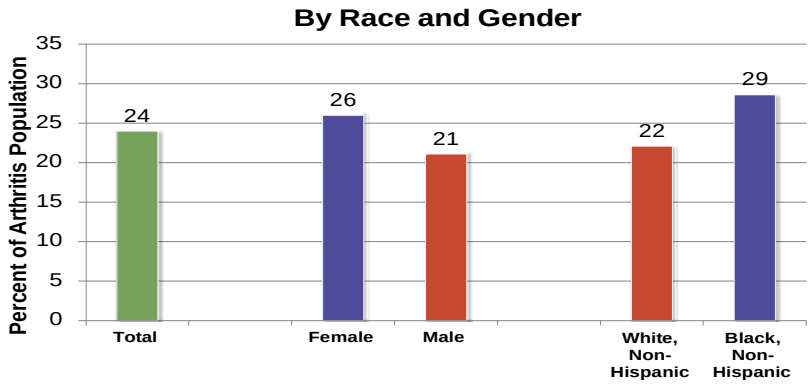
By Education Level



Data Source: 2011 SC BRFSS Generated by Office of Chronic Disease Epidemiology and Evaluation 01/13

Arthritis may interfere with normal social activities such as shopping, going to movies, going to church, and attending other social gatherings (Theis, Murphy, Hootman, & Wilkie, 2013). In 2011, BRFSS respondents with arthritis were asked the question: "During the past 30 days, to what extent has your arthritis or joint symptoms interfered with your normal social activities, such as going shopping, to the movies, or to religious or social gatherings?" In South Carolina, almost one in four adults with arthritis (24%) reported that their arthritis interfered with social participation "a lot". Of this group, females and blacks were more likely to have problems with social participation than white or males (Fig. 3.11).

Figure 3.11. Prevalence of Social Participation Restriction in People with Arthritis

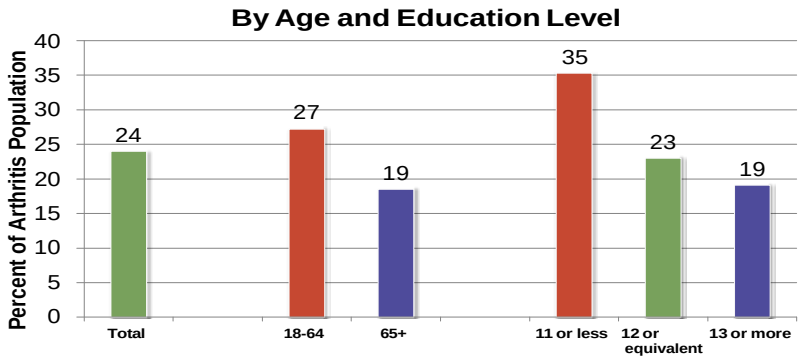


Data Source: 2011 SC BRFSS

Generated by Office of Chronic Disease Epidemiology and Evaluation 1/13

Adults with arthritis who have less than a high school education were more likely than those with at least 12 years of school to have social participation restriction due to arthritis pain and stiffness. People with arthritis ages 18-64 were more likely to have social participation problems due to arthritis pain and stiffness than those ages 65 and older (Fig 3.12).

Figure 3.12. Prevalence of Social Participation Restriction in People with Arthritis

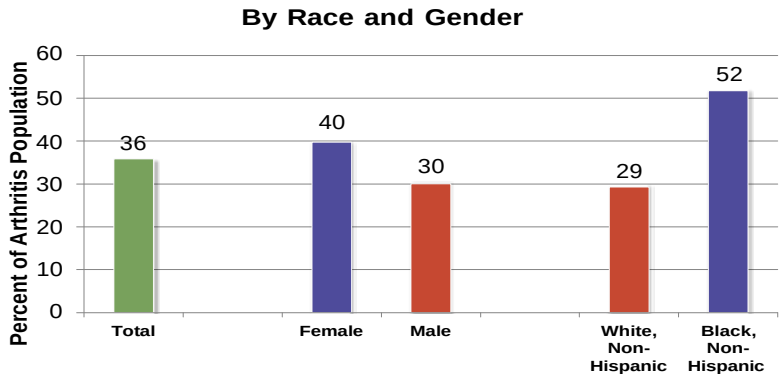


Data Source: 2011 SC BRFSS

Generated by Office of Chronic Disease Epidemiology and Evaluation 1/13

Among adults with arthritis, more than one-third (36%) reported having severe joint pain. Females were more likely to report joint pain than males, and blacks were almost twice as likely as whites to report severe joint pain (Fig 3.13).

Figure 3.13. Prevalence of Severe Joint Pain in People with Arthritis

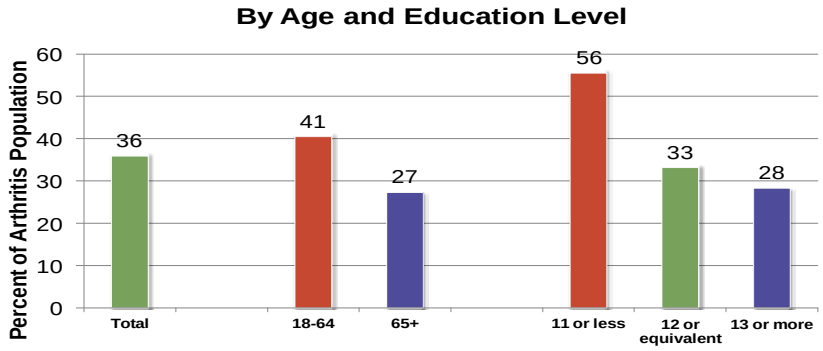


Data Source: 2011 SC BRFSS

Generated by Office of Chronic Disease Epidemiology and Evaluation 1/13

Adults with arthritis ages 18-64 were nearly twice as likely to have severe joint pain as those ages 65 and older. People with less than a high school education were almost twice as likely to have severe joint pain as those with at least one year of post-high school education (Fig. 3.14).

Figure 3.14. Prevalence of Severe Joint Pain in People with Arthritis



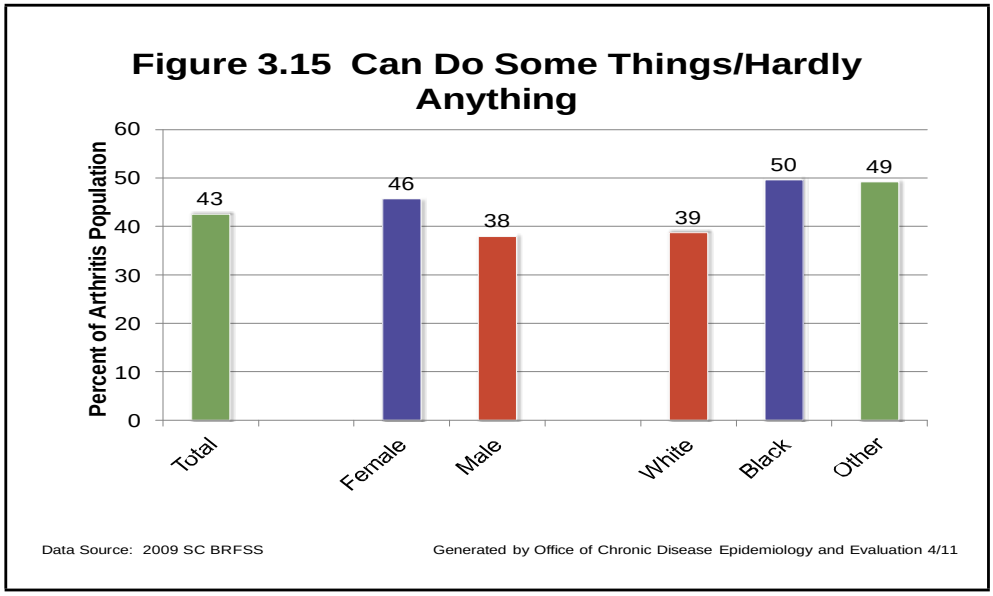
Data Source: 2011 SC BRFSS

Generated by Office of Chronic Disease Epidemiology and Evaluation 1/13

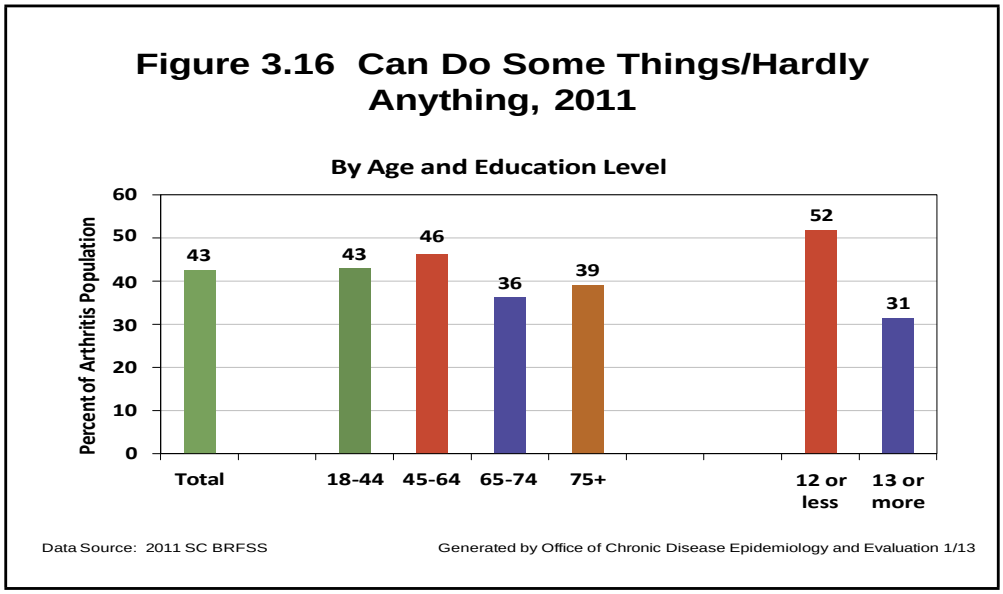
BRFSS respondents with arthritis were asked the question: “Thinking about your arthritis or joint symptoms, which of the following best describes you today?” The possible answers were "I can do everything I would like to do”; “I can do most things I would like to do;” “I can do some things I would like to do;" or "I can do hardly anything I would like to do.”

Figures 3.15-3.17 reflect the responses of those who answered “I can do some things I would like to do;" or "I can do hardly anything I would like to do.” More than one-third of adults with arthritis (43%) stated that they could do only some or hardly any of the things they wanted to do.

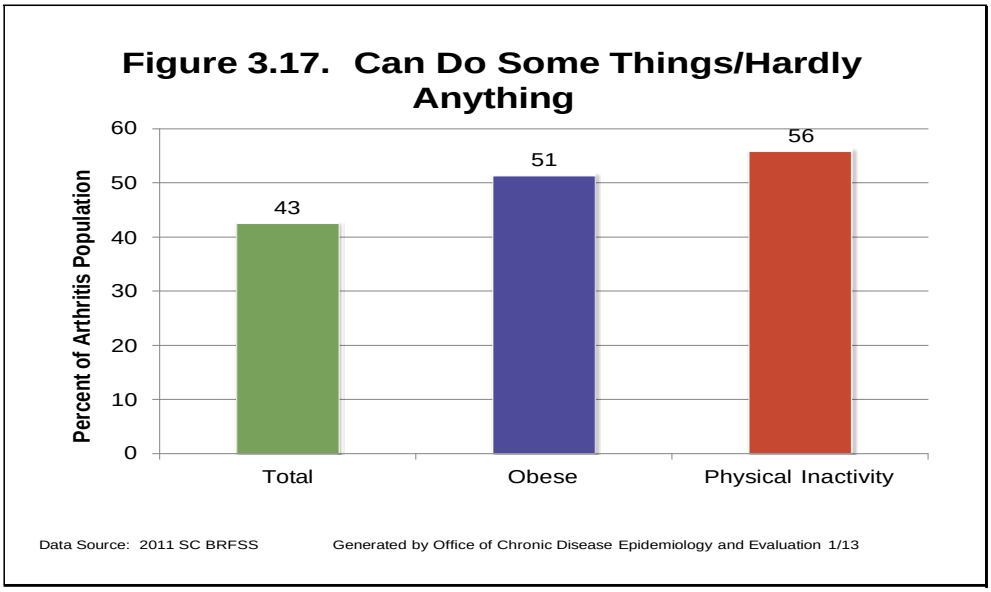
Females were more likely than males to be unable to do the things they want to do. Blacks and those in the “Other” race/ethnicity category were more likely than whites to be unable to do the things they want to do as a result of their arthritis (Fig. 3.15).



Adults with arthritis ages 45-64 were more likely than older or younger age groups to be unable to do the things they want to do. Furthermore, among people with arthritis, those with less than a high school education were almost twice as likely to be unable to do the things they want to do than those with more than a high school education (Fig. 3.16).



More than one-half (51%) of adults with arthritis who were also obese stated that they could only do some things or hardly anything that they wanted to, as compared to 43% of those with arthritis who were normal weight. More than one-half (56%) of adults with arthritis who were physically inactive, without regard for weight status, stated that they were unable to do most of the things that they wanted to do. The prevalence is 30% higher than for the overall adult population with arthritis (Fig. 3.17).

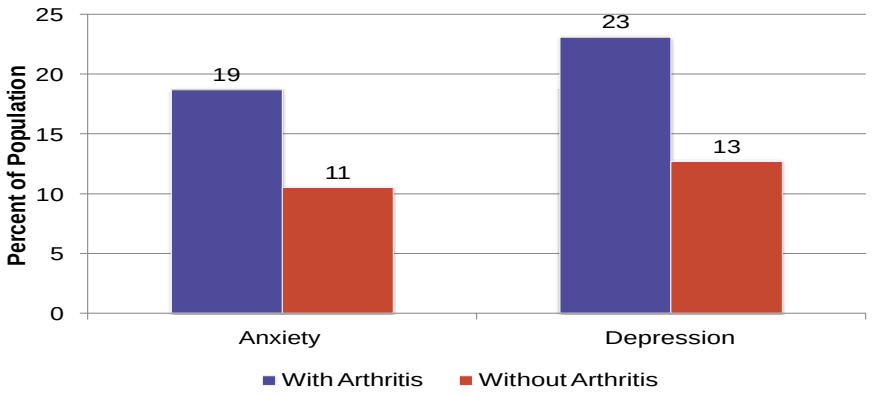


Depression and Anxiety in People with Arthritis

People with arthritis have been shown to have a high prevalence of depression and anxiety (Murphy, Sacks, Brady, Hootman, & Chapman, 2012). In 2010, the BRFSS asked respondents about their tendency to have anxiety or depression. See Appendix X for the survey questions relative to anxiety and depression.

Adults with arthritis were about 70% more likely to have anxiety and 80% more likely to be depressed than those without arthritis. Almost one in five adults with arthritis (19%) reported having anxiety, compared to one in ten (11%) of those without arthritis. Almost one in four adults with arthritis (23%) reported being depressed, compared to slightly more than one in ten (13%) of those without arthritis (Fig. 3.18).

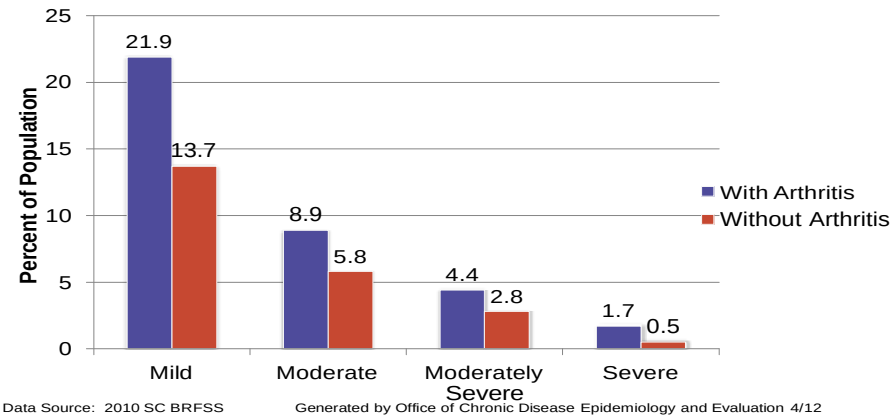
Figure 3.18. Prevalence of Anxiety and Depression in those with and without Arthritis



Data Source: 2010 SC BRFSS Generated by Office of Chronic Disease Epidemiology and Evaluation 4/12

Adults with arthritis were about 50-60% more likely to have mild, moderate, or moderately severe symptoms of depression, and more than three times more likely to have severe symptoms of depression than those without arthritis (Fig. 3.19).

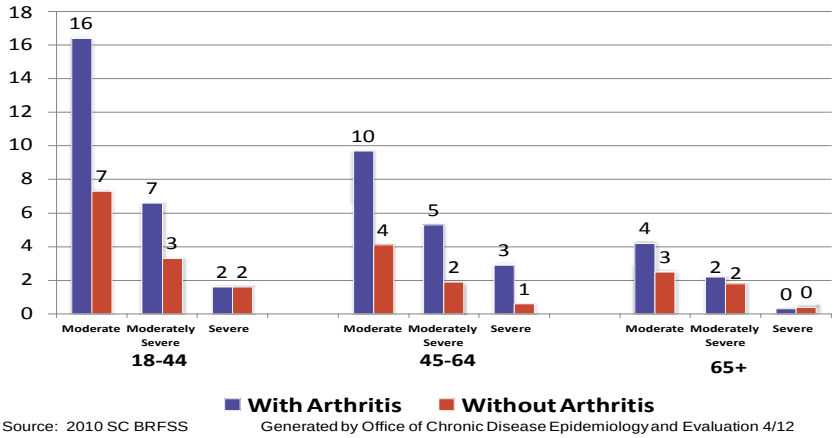
Figure 3.19. Severity of Depressive Symptoms in those with and without Arthritis, SC BRFSS 2010



Data Source: 2010 SC BRFSS Generated by Office of Chronic Disease Epidemiology and Evaluation 4/12

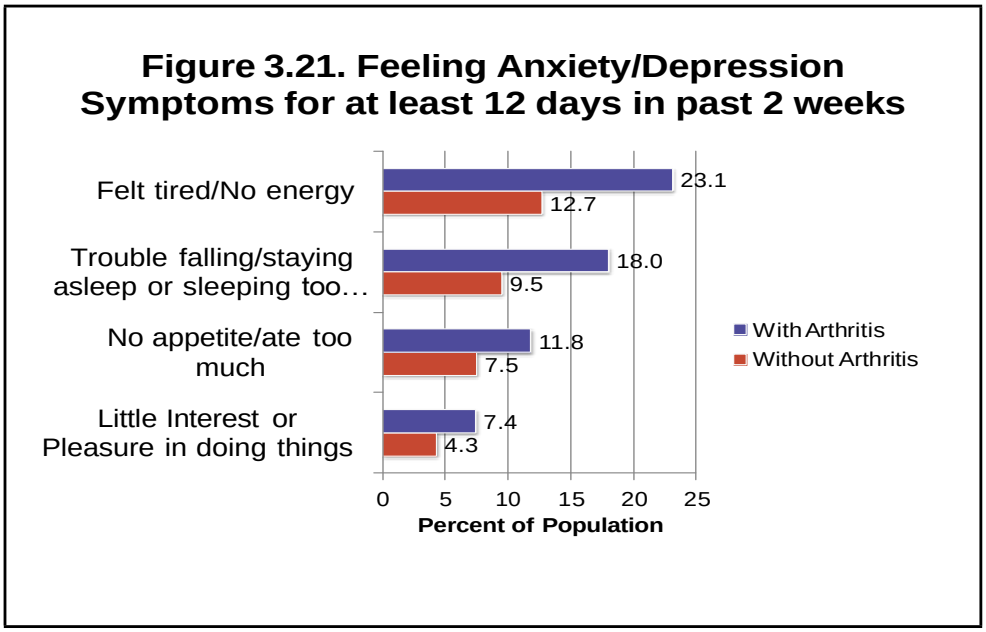
Younger adults with arthritis reported more severe levels of depression than older age groups with arthritis. Respondents with arthritis in the 18-44 age group were twice as likely to experience moderate or moderately severe depression than those without arthritis. Among adults ages 45-64, severe depression was almost 5 times more likely to occur in people with arthritis than in those without. In the 65 and older age group, no difference existed in depression between those with and without arthritis (Fig. 3.20).

Figure 3.20. Severity of Depressive Symptoms in those with and without Arthritis by Age Group, SC BRFSS 2010

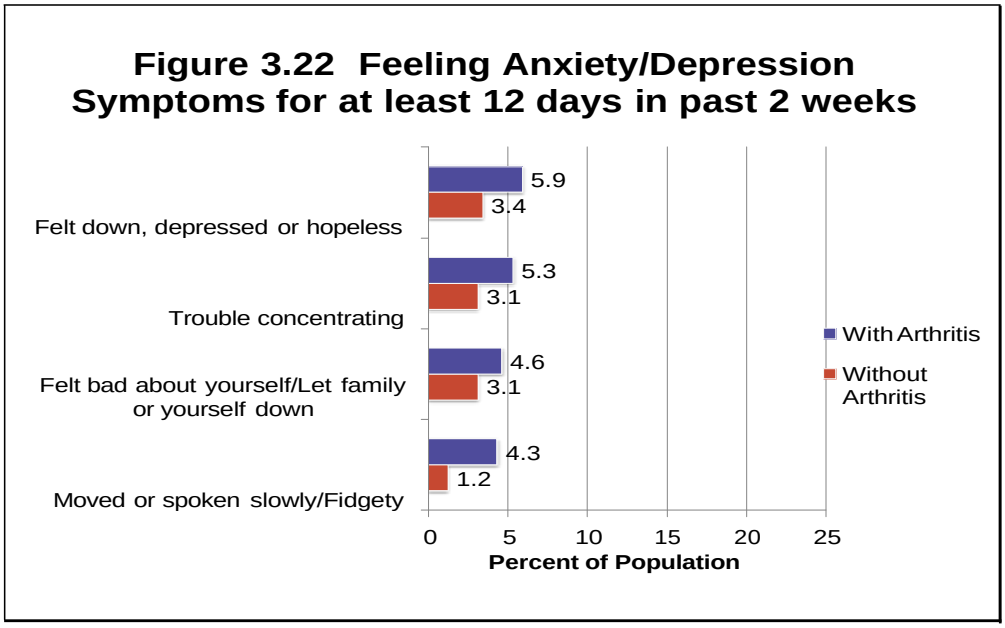


Data Source: 2010 SC BRFSS Generated by Office of Chronic Disease Epidemiology and Evaluation 4/12

BRFSS respondents were asked about their tendency to feel specific depressive symptoms. These symptoms included the following: little interest or pleasure in doing things; poor appetite or eating too much; trouble falling asleep, staying asleep or sleeping too much; feeling tired/no energy; moving or speaking slowly or fidgety; feeling bad about yourself or feeling that you let your family or yourself down; trouble concentrating; and feeling down, depressed or hopeless. The most common symptom reported was feeling tired or no energy. The second most common symptom was related to sleep, such as trouble falling or staying asleep. In all cases, these specific symptoms were almost twice as common among adults with arthritis as among those without arthritis (Fig. 3.21).



Adults with arthritis were three times more likely to feel depressed or hopeless, have trouble concentrating, feel bad about themselves, move or speak slowly, or fidget than the population without arthritis (Fig. 3.22).



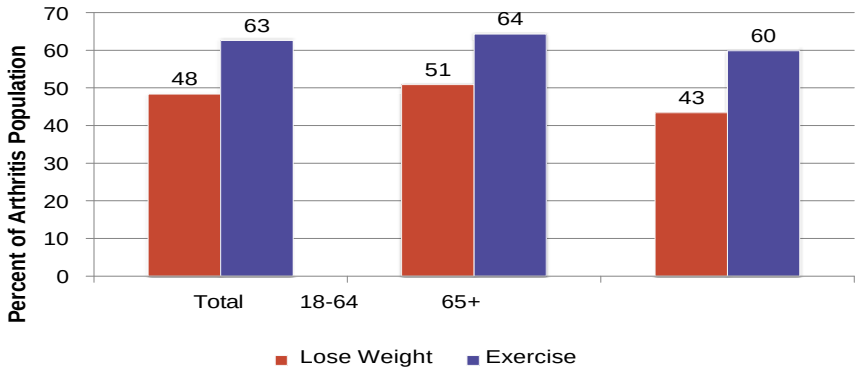
Chapter Four: Prevention and Control of Arthritis

Research shows that physical activity reduces pain, improves function, and delays disability. In addition, research studies suggest that maintaining an ideal body weight and avoiding joint injuries reduce the risk of developing arthritis and may decrease disease progression (Austin, Qu, & Shewchuk, 2013; Callahan et al., 2013; Dean & Gormsen Hansen, 2012; Englbrecht, Kruckow, Araujo, Rech, & Schett, 2013; Fuchs et al., 2013; Sperber et al., 2013; Theis et al., 2013) .

Obtaining an early diagnosis so that appropriate management can be initiated may improve the quality of life for people with arthritis. Early diagnosis and appropriate management of arthritis, including self-management activities and courses, weight control, and physical activity can help people with arthritis function better, stay productive, and lower health care costs.

South Carolina BRFSS respondents who reported having been diagnosed with arthritis were asked whether they had been advised by their doctor to lose weight (if they were overweight) or to exercise as a way of reducing arthritis symptoms. Only 48% of respondents with arthritis were advised to lose weight and 63% were advised to exercise. No differences existed by age group (Fig. 4.1).

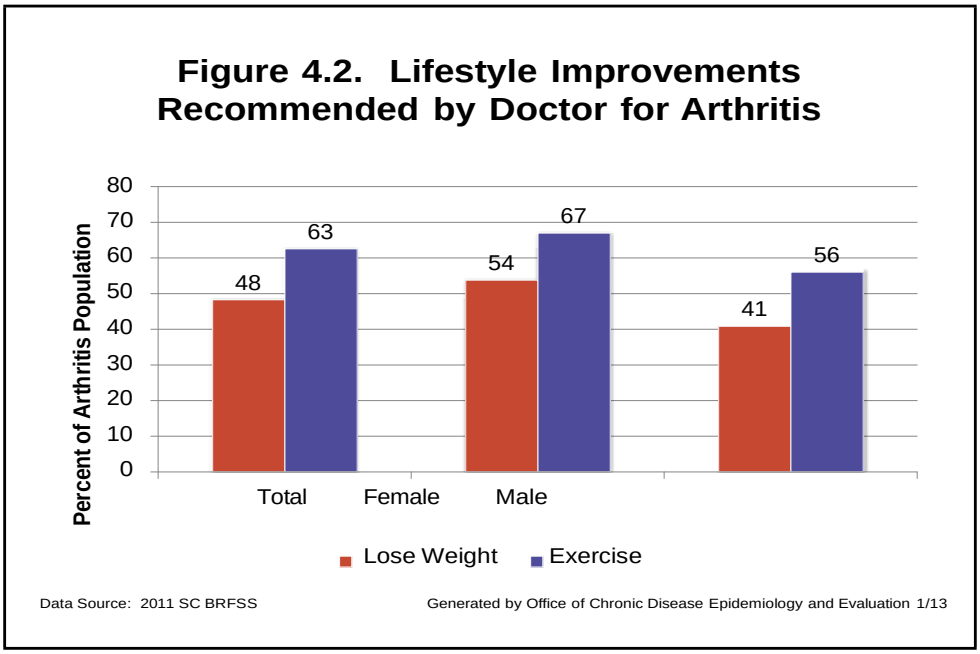
Figure 4.1. Lifestyle Improvements Recommended by Doctor for Arthritis



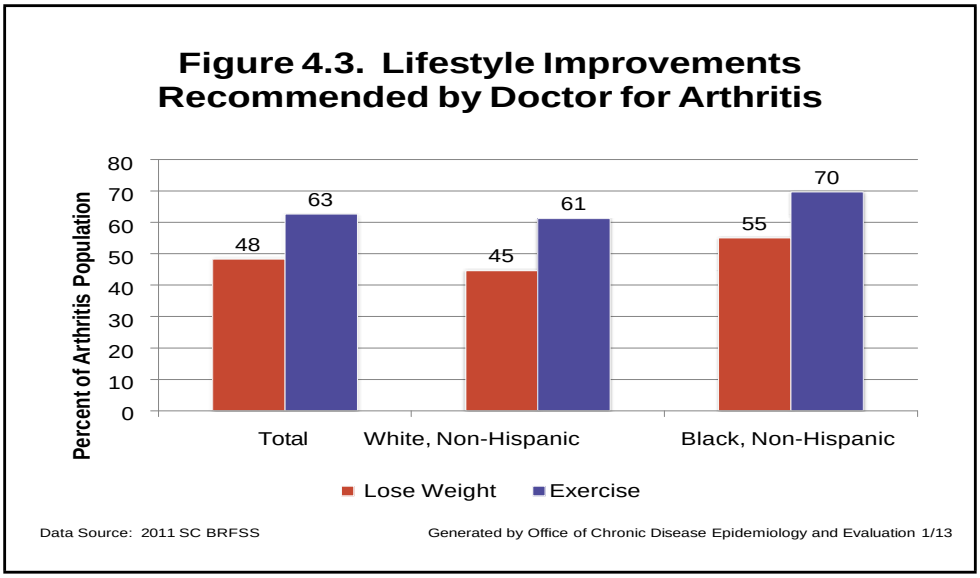
Data Source: 2011 SC BRFSS

Generated by Office of Chronic Disease Epidemiology and Evaluation 1/13

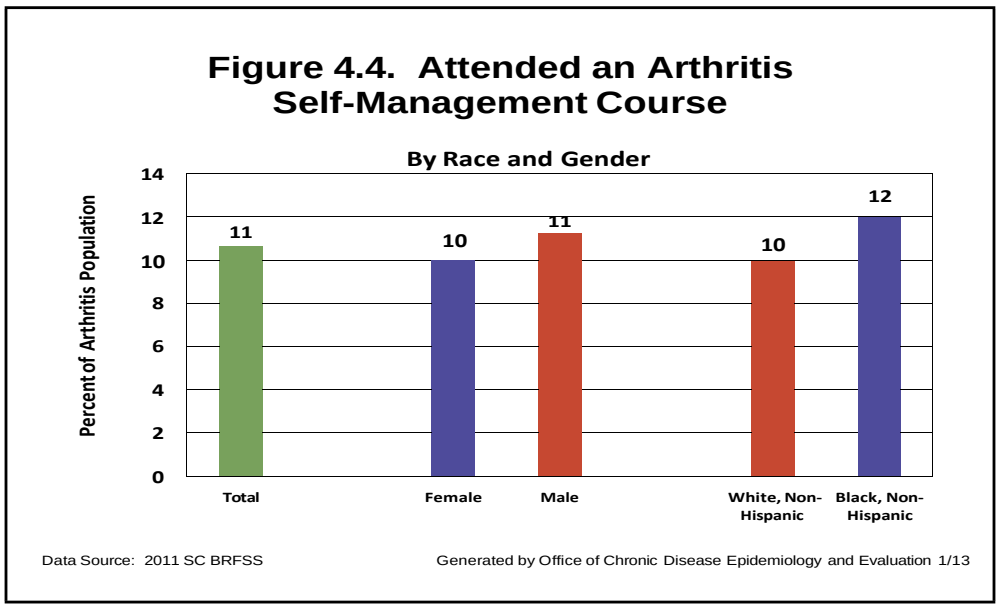
Significantly more females were advised to lose weight and to exercise than males (Fig 4.2).



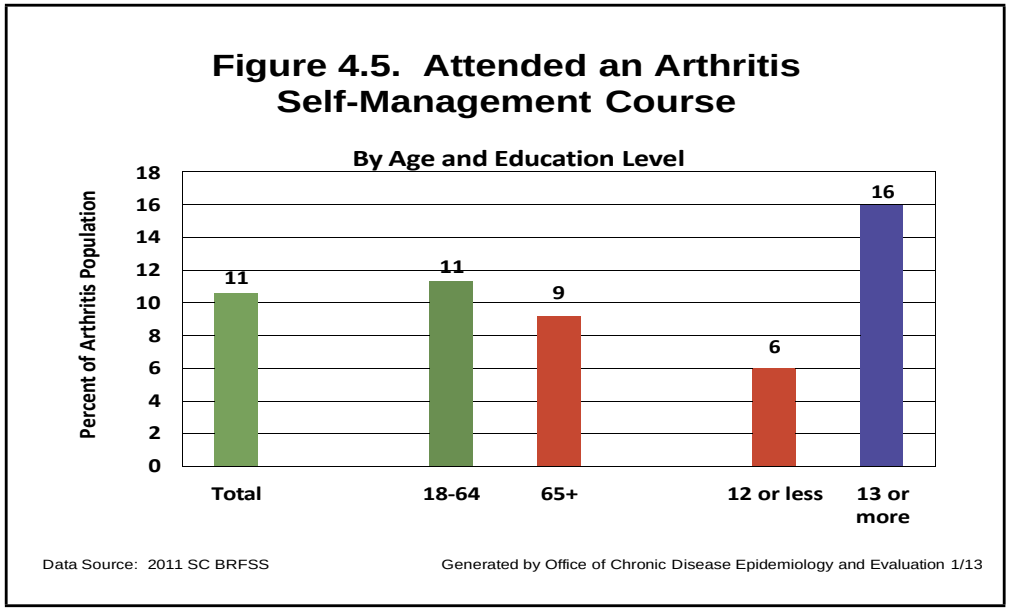
Significantly more blacks were advised to lose weight and to exercise than whites (Fig 4.3).



When asked if they had ever attended an arthritis self-management course, only about one in ten (11%) reported having ever attended a self-management course. The rate was slightly higher in males than in females, and significantly higher in blacks than in whites (Fig. 4.4).



People with diabetes under age 65 were more likely to have attended an arthritis self-management course. People with at least one year of post-high school education were almost three times more likely to attend a self-management course, compared to those with a 12 years or less of education (Fig. 4.5).



Arthritis frequently co-occurs with other health conditions, such as diabetes and heart disease. It is important for people with any chronic disease to become and stay physically active and to learn how to better manage their health. Unfortunately, there are barriers to becoming more active and accessing self-management programs (Hootman, Murphy, Helmick, & Barbour,

2011). It is important to consider how these conditions interact and how barriers can be removed.

There are proven physical activity and self-management interventions that work for people with arthritis (Lorig, Mazonson, & Holman, 1993), but they are not used nearly as much as they could be. If they were used to their full potential, they could have a positive effect on arthritis, as well as on diabetes, heart disease, and high blood pressure.

Public Health Approach

In 1998 the Centers for Disease Control and Prevention (CDC), the Arthritis Foundation, and the Association of State and Territorial Health Officials released the first national plan to address arthritis. More than 90 organizations offered input into The National Arthritis Action Plan: A Public Health Strategy (NAAP) (Arthritis Foundation, Association of State and Territorial Health Officials, & Centers for Disease Control and Prevention, 1999). The plan emphasized targeting population groups through a systematic public health approach, focusing on prevention, early diagnosis, and appropriate management of the disease to prevent disability. The plan proposed three major areas to reduce the impact of arthritis:

- Surveillance, epidemiology and prevention research, communication and education
- Programs, policies, and systems

In order to reach population groups, the plan shifts the traditional emphasis on treating individuals with arthritis to a public health approach. The NAAP strategies include:

1. Increase public awareness of arthritis as the leading cause of disability and an important public health problem
2. Prevent arthritis whenever possible
3. Promote early diagnosis and appropriate management for people with arthritis to ensure a maximum number of years of healthy life
4. Minimize preventable pain and disability due to arthritis
5. Support people with arthritis by developing and helping them access the resources they need to cope with their disease
6. Ensure that people with arthritis receive the family, peer, and community support they need

South Carolina Arthritis Prevention and Control Program

Background

In response to NAAP, arthritis was included in the nation's health objectives for the first time. In 1999, Congress appropriated funds for CDC to develop a national public health program on arthritis. The same year, CDC announced a "request for proposals" for state arthritis programs. Thirty-eight state health departments were funded, including the South Carolina Department of Health and Environmental Control (DHEC).

In September 1999, DHEC was awarded funding to develop the South Carolina Arthritis Prevention and Control Program (hereinafter called the SC Arthritis Program) within DHEC. The program was established to develop a public health, population-based approach to the arthritis in South Carolina. The program's original focus was on conducting surveillance, developing a state plan for arthritis action, increasing awareness of arthritis as a public health issue, and addressing gaps in services for people with arthritis. CDC continues to fund the program today, along with those in eleven other states.

The Program Today

The program is aligned with the performance goal for the National Center for Chronic Disease Prevention and Health Promotion of reducing the prevalence of disabling chronic diseases: arthritis and obesity.

5 Year Program Objectives, July 1, 2012 - June 31, 2017:

Increase access to and use of evidence-based interventions for adults with arthritis and other related, or co-occurring conditions, reaching 50,000 people.

Reduce the proportion of adults with arthritis who do not engage in leisure time physical activity by 5%.

Reduce the proportion of adults with arthritis reporting severe pain by 5%.

Reduce the mean activity limited days in the past 30 among adults with arthritis by 5%.

Current Program Activity Highlights:

Produce and disseminate reports highlighting the prevalence and impact of arthritis in South Carolina.

Build a statewide infrastructure of partners to embed and sustain evidence-based interventions within their organizations to improve the quality of life for people with arthritis and related or co-occurring conditions.

Provide leadership, support, training, and technical assistance to delivery-system partners to offer evidence-based interventions in communities throughout the state. Develop relationships with partners who can serve as referral networks or provide other supportive roles to increase access to and use of the interventions.

Provide educational information to governmental and organizational policy makers.

Facilitate adoption of environmental approaches or policy changes that will lead to more widespread and uniform distribution of evidence-based programs. The ultimate goal is for interventions to be widely and uniformly accessible to all adults with arthritis, regardless of where they live, their race, ethnicity, income, or disability.

Heighten awareness of arthritis data and programmatic activities through the media.

Increase awareness about the importance of physical activity as a pain reliever for arthritis.

Work collaboratively with other chronic disease programs and stakeholders; and maintain collaborations to increase the program's efficiency, effectiveness, and impact.

Arthritis Evidence-Based Intervention Programs

Physical Activity Programs

Arthritis Foundation Exercise Program is a gentle exercise program designed to reduce pain and stiffness, improve mobility, and increase muscle strength. A trained instructor guides participants through a series of low-impact activities, relaxation techniques, and health education topics. All exercises can be modified to meet individual needs. Classes meet for one hour, two or three times per week.

Arthritis Foundation Walk with Ease is a six-week guided walking program designed for people with arthritis or anyone who wants to become more active. Participants walk in a small group led by a trained coach or on their own with the help of a guidebook. Walking times increase gradually, with sessions lasting about an hour.

Self-Management Programs

Arthritis Self-Management Program is a small-group workshop series designed for people living with arthritis. Participants learn how to manage their pain, talk to their doctor, exercise safely, eat healthy, and deal with difficult emotions. Participants set personal goals and build self-confidence in their ability to manage their health with the support of others in the group. Workshops meet for two hours, once a week for six weeks.

Better Choices, Better Health is a small-group workshop series designed by Stanford University for people living with ongoing health conditions such as arthritis, chronic lung disease, depression, diabetes, heart disease, or high blood pressure. The program is designed to foster mutual support while participants learn how to make changes to improve their quality of life. Topics include developing an action plan to improve health, exercising safely, talking to the doctor, eating healthy, and dealing with difficult emotions. Workshops meet for two and a half hours, once a week for six weeks.

The Arthritis Toolkit is a self-study program that helps to develop a personalized plan to manage your arthritis at home. The Toolkit includes a workbook, a relaxation CD, two exercise CDs, and helpful information sheets.

More information on these interventions and specific locations of classes can be found on the DHEC Arthritis Program web page http://www.scdhec.gov/arthritis

Chapter Five: Arthritis Surveillance

The SC DHEC Division of Chronic Disease Epidemiology collects data and information to monitor the prevalence and severity of arthritis in South Carolina using the Behavioral Risk Factor Surveillance System (BRFSS) arthritis modules (Arthritis Burden and Arthritis Management). These two modules are included in the BRFSS survey instrument in odd-numbered years. The purpose of gathering arthritis data is to determine the burden and impact of arthritis in South Carolina through a comprehensive statewide assessment. Data products include state and regional Arthritis Fact Sheets, the Arthritis Burden Report, and data for annual reports, and presentations at state, regional and national meetings. The Burden Report and Fact Sheets are produced every two years.

Definition

Surveillance is defined as ongoing systematic collection, analysis and dissemination of outcome-specific data for use in planning, implementation and evaluation of public health practice. The BRFSS is the main type of surveillance in South Carolina. However data on knee replacements and hospitalizations due to arthritis are also reported utilizing the SC Hospital Discharge Database.

Case definition of arthritis:

In 1995, the National Arthritis Data Workgroup (NADW) defined arthritis and other rheumatic conditions using a set of ICD9-CM diagnostic codes that represented all potential diagnoses for arthritis and other rheumatic conditions (Helmick, Lawrence, Pollard, Lloyd, & Heyse, 1995; National Arthritis Data Workgroup, 1994). Any visit where the first listed diagnostic code included the codes defined by the NADW and was not related to injury or poisoning was termed a primary arthritis visit. For analytic and descriptive purposes, individual diagnostic categories were devised using groupings of ICD9 codes and selected individual codes of interest.

Measuring the Burden of Arthritis

The CDC uses the Behavioral Risk Factor Surveillance System (BRFSS) in all 50 states to collect health information about adults age 18 years and older on the risk factors and risk behaviors related to the major causes of morbidity and mortality. The BRFSS is used to obtain state-specific arthritis data on prevalence, quality of life, activity limitation, and risk factors. Using the CDC case definition, arthritis is defined as people who have been told they have rheumatoid

arthritis, gout, lupus, or fibromyalgia by a health professional. National arthritis data is measured using the National Health Interview Survey (NHIS).

Behavioral Risk Factor Surveillance System (BRFSS) Survey

The BRFSS is a random digit dialed telephone survey of South Carolina adults who are 18 years of age or older. First administered in 1984, it is conducted on an ongoing basis each year, and is used to collect information about the risk factors and risk behaviors related to the major causes of morbidity and mortality in South Carolina. The BRFSS is overseen by the South Carolina Department of Health and Environmental Control Office of Public Health Statistics and Information Services and is designed to estimate the prevalence of behavioral risk factors and some chronic conditions at the state level. BRFSS data has limitations in terms of its capacity to obtain representation of all of the state's regions and population groups; therefore, county-specific percentages were calculated by combining adjacent counties to achieve an adequate sample size. Due to sample size limitations, only overall county-specific information could be calculated.

In the past few years, all large population health surveys that depend on telephone interviews, including the BRFSS, have had to respond to the rapid rise in the proportion of U.S. households that contain only cellular telephones and no landline telephones. In order to maintain survey coverage and validity, surveys have had to add cellular telephones to their samples. At the same time, new methods of weighting to adjust survey data for differences between the demographic characteristics of respondents and the target population have been adopted (Pierannunzi, Town, Garvin, Shaw, & Balluz, 2012).

Since the 1980s, CDC has used a statistical method called post stratification to weight BRFSS survey data to simultaneously adjust survey respondent data to known proportions of age, race and ethnicity, gender, geographic region, or other known characteristics of a population. This type of weighting is important because it makes the sample more representative of the population and adjusts for nonresponse bias. In 2006, in accordance with the recommendations of the 2004 expert panel, CDC began testing a more sophisticated weighting method called iterative proportional fitting, or raking.

"Raking has several advantages over post stratification. First, it allows the introduction of more demographic variables suggested by the BRFSS expert panel—such as education level, marital status, and home ownership—into the statistical weighting process than would have been possible with post stratification. This advantage reduces the potential for bias and increases the

representativeness of estimates. Second, raking allows for the incorporation of a now crucial variable—telephone source (landline or cellular telephone)—into the BRFSS weighting methodology. Beginning with the 2011 dataset, raking succeeded post stratification as the sole BRFSS statistical weighting method." (CDC Surveillance Resource Center, 2012).

National Health Interview Survey (NHIS)

National arthritis measures are determined using the National Health Interview Survey. Conducted by the National Center for Health Statistics, the National Health Interview Survey (NHIS) has monitored the health of the nation since 1957. The NHIS is a large-scale household interview survey of a statistically representative sample of the U.S. civilian noninstitutionalized population. Interviewers visit 35,000–40,000 households across the country and collect data about 75,000–100,000 individuals (http://www.cdc.gov/nchs/nhis.htm).

Hospital Discharge Data

Information on each hospital discharge is reported to the South Carolina Budget and Control Board, Office of Research and Statistics. The principal discharge diagnosis is primarily the same one responsible for the admission; it was used for all analyses in this report except where noted. Rates of hospitalization (or discharges) are calculated by dividing the number of discharges with a specific diagnosis by the total population, age-adjusted to the year 2000 United States population. These data include only those cases treated in South Carolina hospitals. Cases for South Carolina residents treated in hospitals outside of South Carolina are not included.

More details regarding data sources and methods used in chronic disease surveillance can be found in the *Chronic Disease Surveillance Technical Notes* (http://www.scdhec.gov/health/epidata/docs/EpiTechNotes.pdf*)*

Conclusion: Arthritis in South Carolina

Arthritis is a serious, costly, and disabling public health problem.

Arthritis is one of the most common chronic diseases, affecting more than one in four South Carolina adults or approximately one million people.

Arthritis is the most common cause of disability and diminished quality of life in South Carolina.

People with arthritis reported a higher number of days of poor mental and physical health than people without arthritis.

Approximately 42% of adults with arthritis are obese, and 38% are physically inactive.

Depression and anxiety are significantly more prevalent among adults with arthritis than among those without arthritis.

Medical expenditures for arthritis in the U.S. increased from $252 billion in 1997 to $353 billion in 2005. Medical expenditures for each person increased by 15%.

The CDC Arthritis program recommends that engaging in joint friendly activities, such as **walking**, **swimming,** or **biking** and **participating in available arthritis-specific exercise programs** may help people with arthritis to be more physically active.

The South Carolina Arthritis Program will continue to work to reduce the burden and the impact of arthritis in South Carolina and to improve the health and quality of life of people living with arthritis.

Appendix A. Details on Case Definitions

Advised to exercise--Respondents who answered "Yes" to the question: "Has a doctor or other health professional EVER suggested physical activity or exercise to help your arthritis or joint symptoms?"

Advised to lose weight --Respondents with self-reported doctor-diagnosed arthritis who answered "Yes" to the question: "Has a doctor or other health professional EVER suggested losing weight to help your arthritis or joint symptoms?"

Anxiety--Respondents with arthritis who answered "Yes" to the question: “Has a doctor or other healthcare provider ever told you that you had an anxiety disorder?”

Anxiety and Depression: Specific Symptoms--Respondents with arthritis who answered "Yes" to any of the following questions:

- Over the last 2 weeks, how many days have you felt bad about yourself or that you were a failure or had let yourself or your family down?
- Over the last 2 weeks, how many days have you felt down, depressed or hopeless?
- Over the last 2 weeks, how many days have you felt tired or had little energy?
- Over the last 2 weeks, how many days have you had a poor appetite or eaten too much?
- Over the last 2 weeks, how many days have you had little interest or pleasure in doing things?
- Over the last 2 weeks, how many days have you had trouble concentrating on things, such as reading the newspaper or watching the TV?
- Over the last 2 weeks, how many days have you had trouble falling asleep or staying asleep or sleeping too much?
- Over the last 2 weeks, how many days have you moved or spoken so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you were moving around a lot more than usual?

Arthritis Hospitalizations--In 1995, the National Arthritis Data Workgroup (NADW) defined arthritis and other rheumatic conditions using a set of ICD9-CM diagnostic codes that represented all potential diagnoses for arthritis and other rheumatic conditions (See *Arth Care Res* (4); 1995:203-211; *MMWR* June 1994; 433-438). Any visit where the first listed diagnostic code included the codes defined by the NADW and was not related to injury or poisoning was termed a primary arthritis visit. For analytic and descriptive purposes, individual diagnostic categories were devised using groupings of ICD9 codes and selected individual codes of interest. The categories include soft tissue disorders (excluding back) (726-729), joint pain (716,719), osteoarthritis and allied disorders(715), rheumatoid arthritis (714), myalgia/myositis unspecified (729.1), carpal tunnel syndrome (354), spondylosis/spondylitis and allied disorders (720), diffuse connective tissue disease(710), gout and other crystal arthropathies (274, 712)**.**

Arthritis--Respondents with arthritis answered "Yes" to the question: "Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?" This is the CDC-recommended case-definition for self-reported doctor-diagnosed arthritis.

Arthritis-Attributable Activity Limitation--Respondents with arthritis who answered "Yes" to the question: "Arthritis can cause symptoms like pain, aching, or stiffness in or around the joint. Are you now limited in any way in any of your usual activities because of arthritis or joint symptoms?"

Attended a self-management course for arthritis--Respondents who answered "Yes" to the question: "Have you EVER taken an educational course or class to teach you how to manage problems related to your arthritis or joint symptoms?"

Body Mass Index--Body mass index (BMI) is computed from self-reported height and weight. A BMI of 25.0 to 29.9 is categorized as overweight. A BMI of 30.0 or greater is categorized as obese.

Can do some things/hardly anything --Respondents with self-reported doctor-diagnosed arthritis who answered "I can do some things I would like to do" or "I can do hardly anything I would like to do" when asked the question: "Thinking about your arthritis or joint symptoms, which of the following best describes you today?"

Cardiovascular disease --Respondents who answered "Yes" to either of the following two questions: "Has a doctor, nurse, or other health professional ever told you that you had a heart attack, also called a myocardial infarction?" or "Has a doctor, nurse, or other health professional ever told you that you had angina or coronary heart disease?" Those who answered "Yes" to either question were classified as having cardiovascular disease. Those who said no to both questions were classified as not having cardiovascular disease.

Depression--Respondents with arthritis who answered "Yes" to the question: “Has a doctor or other healthcare provider ever told you that you have a depressive disorder?”

Diabetes--Respondents who answered "Yes" to the question: "Have you ever been told by a doctor that you have diabetes?” Those who answered "No", those who answered "No, pre-diabetes or borderline diabetes", and females who had diabetes only during pregnancy were classified as not having diabetes.

Fair or poor health--Respondents with arthritis who answered “fair or poor” to the question: "Would you say that in general your health is excellent, very good, good, fair, or poor?"

High Cholesterol--Respondents with self-reported doctor-diagnosed high cholesterol were those who answered "Yes" to the question: "Have you ever been told by a doctor, nurse,

or other health professional that your blood cholesterol is high?" Those who said "No" were classified as not having high cholesterol. Those who had never had their cholesterol checked, those who did not know, and those who refused were not included in the calculation.

Hypertension --Respondents who answered "Yes" to the question: "Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?" Those who answered "No" and those who answered "No" told borderline high or pre-hypertensive" or females who had high blood pressure only during pregnancy are classified as not having high blood pressure.

Limited Activity Days--BRFSS respondents were asked the question: "During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?" *≥14 limited activity days*: Respondents with arthritis who answered "14-30 days" to the above question.

Mentally Unhealthy Days--BRFSS respondents were asked the question: "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?" *≥14 mentally unhealthy days*: Respondents with arthritis who answered "14-30 days" to the above question.

Obesity--A BMI of 30.0 or greater is categorized as obese.

Overweight--A BMI of 25.0 to 29.9 is categorized as overweight.

Physical Inactivity--Respondents with inactivity were those who reported no moderate or vigorous physical activity. This measure of non-occupational physical activity is computed from responses to 6 questions on exercise, recreational, and physical activities (other than job duties) during the previous month. This measure includes leisure, household, and transportation activities. Recommended activity for the general adult population is moderate physical activity at least 5 days per week for 30 minutes or more per day or vigorous activity on at least 3 days per week for at least 20 minutes per day. Insufficient activity is some activity but not enough to meet recommendations. Inactivity is no reported moderate or vigorous physical activity. These recommendations are for the general adult population and are not specific for adults with arthritis. The physical activity recommendation for persons with arthritis is 30 minutes of moderate physical activity at least 3 days per week.

Physically Unhealthy Days--BRFSS respondents were asked the question: "Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?" *≥14 physically unhealthy days*: Respondents with arthritis who answered "14-30 days" to the above question.

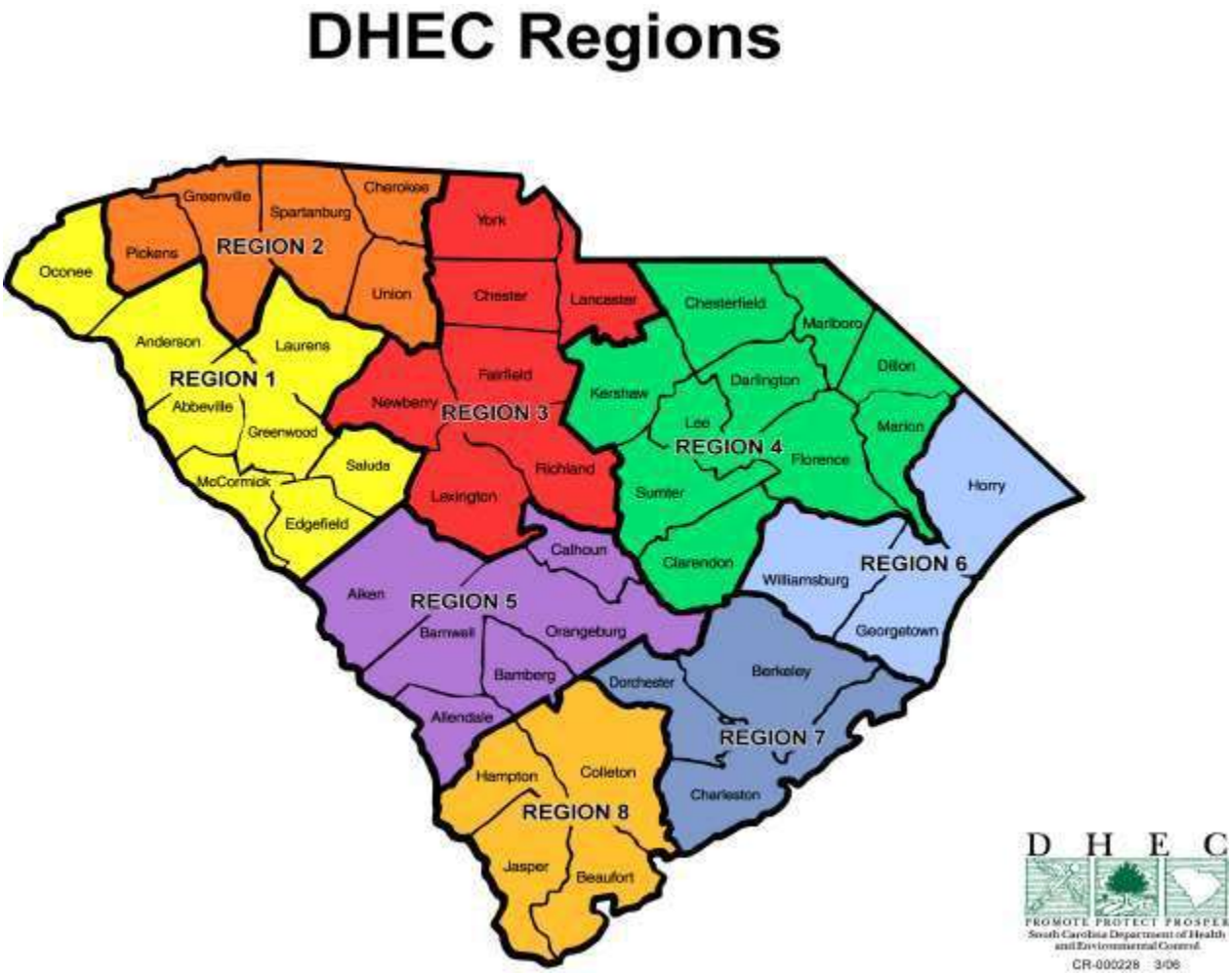
Severe Joint Pain--Respondents with arthritis who answered “7, 8, 9, or 10” to the question “Please think about the past 30 days, keeping in mind all of your joint pain or aching and whether or not you have taken medication. DURING THE PAST 30 DAYS, how bad was your joint pain ON AVERAGE? Please answer on a scale of 0 to 10 where 0 is no pain or aching and 10 is pain or aching as bad as it can be.” Severe joint pain was defined as a pain level of 7-10.

Smoking--Respondents who smoke were those who reported smoking at least 100 cigarettes in their lifetime and who currently smoke every day or some days.

Social Participation Restriction--Respondents with arthritis who answered "A lot" to the question: "During the past 30 days, to what extent has your arthritis or joint symptoms interfered with your normal social activities, such as going shopping, to the movies, or to religious or social gatherings?"

Work Limitation--Respondents with arthritis who answered "Yes" to the question: "In this next question, we are referring to work for pay. Do arthritis or joint symptoms now affect whether you work, the type of work you do, or the amount of work you do?""

Appendix B. DHEC Public Health Regions



Appendix C. 2011 Regional Data

	Reg. 1	Reg. 2	Reg. 3	Reg. 4	Reg. 5	Reg. 6	Reg. 7	Reg. 8	SC
Doctor diagnosed arthritis									
Yes	31.0	25.9	27.2	32.4	27.9	34.3	22.8	27.4	27.9
Gender									
Male	23.2	19.4	27.2	28.5	21.0	30.2	16.9	24.6	23.5
Female	38.2	31.9	27.1	35.8	34.0	38.0	28.3	30.1	32.0
Age Group									
18-44	11.8	7.5	9.4	12.7	7.3	12.6	7.2	9.2	9.4
45-64	39.2	37.9	39.6	42.9	39.3	42.9	31.3	33.7	38.4
65+	57.4	51.8	55.8	59.7	50.9	59.9	56.0	50.8	55.4
Race									
White NH	33.0	27.8	27.1	33.9	30.9	35.5	25.2	31.3	29.5
Black NH	23.6	25.8	26.5	28.2	24.2	31.7	18.7	21.6	25.1
Education (years)									
Less than High School Graduate	31.6	42.0	43.5	39.0	33.8	41.3	29.4	29.0	37.6
High School Graduate	38.1	29.1	28.0	30.7	28.2	35.5	20.4	26.1	29.2
More than High School	25.8	18.9	22.6	30.5	25.1	31.2	22.5	27.8	24.0
Race									
Other	24.3	7.2	27.5	29.2	19.5	21.4	13.1	11.6	17.8
Race and Gender									
White NH Male	26.4	21.4	25.7	31.8	22.9	30.1	18.1	29.4	24.7
White NH Female	38.6	33.6	28.5	35.8	37.1	40.7	31.9	33.1	33.9
Black NH Male	13.6	19.6	29.1	22.0	19.6	33.1	13.4	17.7	21.2
Black NH Female	34.9	30.6	24.8	33.8	29.0	30.5	23.0	25.0	28.3
Other Male	22.2	8.0	30.1	29.6	17.5	14.1	15.5	11.6	18.0
Other Female	27.6	5.5	22.3	29.0	21.2	27.2	10.6	11.6	17.5

	Reg. 1	Reg. 2	Reg. 3	Reg. 4	Reg. 5	Reg. 6	Reg. 7	Reg. 8	SC
Activity Limitation Attributable to Arthritis Among Arthritis Cases									
Yes	51.6	53.8	42.3	50.6	54.2	49.6	56.3	45.1	50.1
Gender									
Male	42.6	52.2	43.7	38.3	52.8	42.9	50.8	47.7	45.7
Female	56.8	54.8	41.2	59.2	54.9	54.6	59.5	43.1	53.0
Age Group									
18-44	54.9	59.2	39.1	51.6	49.8	48.8	71.1	32.3	51.3
45-64	55.3	56.9	46.5	56.4	61.6	54.1	61.7	51.7	54.7
65+	45.7	47.5	37.9	42.3	44.7	45.0	44.1	43.1	43.6
Race									
White NH	50.5	49.8	41.4	50.9	51.9	47.1	50.8	45.5	48.1
Black NH	59.7	67.2	39.7	49.1	59.4	56.8	72.1	39.3	53.6
Education (years)									
Less than High School Graduate	57.0	54.0	45.7	59.0	61.4	70.4	67.5	71.0	57.3
High School Graduate	50.7	58.2	37.0	55.0	52.8	39.4	54.8	41.5	48.7
More than High School	49.8	50.4	45.1	40.1	51.1	48.8	53.3	40.7	47.6
Race and Gender									
White NH Male	42.4	46.5	42.8	38.5	48.9	44.5	42.4	52.0	43.9
White NH Female	55.4	51.7	40.3	61.4	53.3	48.9	55.4	40.2	50.8
Black NH Male	58.0	73.1	33.2	33.8	64.4	40.7	70.3	26.5	47.2
Black NH Female	60.5	64.0	44.0	57.5	56.1	71.3	73.1	47.6	57.5
Other Male	17.4	84.0	66.8	14.3	18.7	24.9	66.7	44.9	57.1
Other Female	48.7	54.4	39.8	35.9	73.7	78.9	92.7	85.1	57.6
Race									
Other	30.9	77.0	59.6	29.1	50.8	69.6	76.8	59.5	57.3
Overweight/Obese									
≥ 25.0 BMI	53.3	57.1	44.6	52.1	56.1	49.0	59.6	48.2	52.3
Physical Activity									
None	60.7	56.2	53.2	57.8	56.0	57.1	66.9	54.5	57.7
Source: PHSIS, SC DHEC 2/11/2011									

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